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The Journal of Speech and Hearing Disorders

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The Journal of Speech and Hearing Disorders

VOLUME 14 SEPTEMBER, 1949 NUMBER 3

TWENTY-FIFTH ANNUAL CONFERENCE

of the

American Speech and Hearing Association

Stevens Hotel
Chicago, Illinois
December 28-30, 1949

American Speech and Hearing Association

1949 Convention

PROGRAM OUTLINE

Tuesday, December 27, 1949

(Pre-Convention)

1:30
Meeting of Foundations Committee
Meeting of Committee on Academic and Professional Preparation
Meeting of Committee on Credentials
Meeting of Committee on Ethical Practice
Meeting of Committee on Terminology
Meeting of Committee on Association Honors
Meeting of Committee on Constitutional Revision
Meeting of Committee on Exchange of Materials

3:00
Meeting of Executive Council

7:30
Meeting of Executive Council

8:00
First Annual Convention of Sigma Alpha Eta

Wednesday, December 28, 1949

9:00-10:30
General Session—All cooperating Associations

10:40-12:10
Hearing Programs: Organization and Instrumentation

10:40-12:10
Voice and Articulation Disorders

12:20-1:50
Alumni Luncheons

2:00-3:30
Experimental Phonetics (SAA, ASHA)

2:00-3:30
Stuttering: Nature, Psychotherapy and Speech Therapy

3:40-4:40
Bell Telephone Laboratories: The Acoustical Characteristics Which Differentiate Speech Sounds

4:50
Business Meeting

7:00
Short Course: The Diagnosis of Voice Disorders

7:30-9:00
Panel Discussion: Instruments for Clinic and Research Programs

8:00
Meeting of Executive Council

Thursday, December 29, 1949

9:00-10:30
Speech Correction in Public Schools

10:40-12:10
Hearing Aid Procedures

10:40-12:10
Panel: Problems in the Organization and Management of Public School Speech Correction Programs

12:20-1:50
Joint Luncheon of all Associations

2:00-3:30
Organic Disorders of Speech

3:40-5:10
Clinical Procedures in Hearing Rehabilitation (SAA, ASHA)

7:00
Short Course: The Diagnosis of Voice Disorders

7:30
Panel Discussion: Aphasia

8:15
Meeting of Executive Council

Friday, December 30, 1949

9:00-10:30
Scientific Basis of Hearing

9:00-10:30
Clinical Psychological Techniques Used in Speech and Hearing Clinics

10:40-12:10
Voice and Articulation Disorders

10:40-12:10
Visual Aids: Illustrative Portions of Motion Picture Films of Interest to Speech Correctionists and Audiologists

12:20-1:50
Luncheon and Business Meeting

2:00
Meeting of Executive Council

2:00-3:30
Experimental Phonetics (SAA, ASHA)

2:30-4:30
Visit to University of Illinois Medical and Dental Colleges for Clinical Demonstrations

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Teaching Speech Improvement in Japan

Doris Yoakam Twichell

LIVING in Japan during the Occupation years of 1947 and 1948 afforded many occasions to study the Japanese people and their language, but few opportunities to practice speech therapy. Restrictions were many and segregation of the American Occupation Forces was almost complete during this time in spite of the many facilities offered for sight-seeing.

GENERAL OBSERVATIONS

It was my good fortune to be able to travel by jeep, train and auto into many remote areas of the island of Honshu. Like other professional visitors, I was surprised at the scarcity of crippled and maimed, and especially so in a period so close to the end of a war. I saw only a few cases with scar tissue resulting from burns, and a handful of people afflicted with cerebral palsy and the effects of infantile paralysis. This may be a testimony to the ability of families to keep such members hidden or to the quality of Japanese medical skill. On the other hand, I saw many people with ocular disturbances ranging from ptosis, wall and cross eyes to bad infections and loss of both eyes. There were scores of cases of purulent sinusitis and extensive dermatitis.

In visiting several prominent hospitals I was able to obtain a brief glimpse of some of the facilities for medical diagnosis and treatment. The practice of adequate hospital sanitation was as sadly lacking in one of Tokyo's most famous hospitals as it was in a backwoods clinic in the interior. Interest and enthusiasm among the physicians was a most encouraging sign. Individual doctors with whom we talked seemed to have endless questions to ask my physician husband and eagerly devoured news of drugs which have been in use in the United States for several years. Copies of *The Journal of the American Medical Association* which we gave to a doctor in Tokyo served as the basis for his program at a meeting of local physicians.

At the medical school and hospital in Kanazawa, a city located on the west coast of Japan and in an area untouched by the devastation of war, we met a laryngologist who showed us a Japanese sound recording machine which he kept in his office, and also the hospital's 'hearing-testing room,' a cubicle which contained only a fine black lacquer piano. In his laboratory there were beautiful German surgical instruments, twin sets of tracheotomy tubes, and excellent sets of tuning forks. They all looked shiny and unused. His library contained excellent, if old, books on anatomy of the head and neck. There were a few old American medical books and magazines, but most of the library was in German or Japanese.

We became acquainted with the laryngologist at the leprosarium located a short distance north of Tokyo, an intelligent man who was serving his twelfth year at the leper colony and who was working industriously on his special research which was a study of the effect of leprosy on the mouth and respiratory tract. He showed us drawings and pictures saved through

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the war years, and these were accurate as well as masterpieces of artistry. He had photographed his own slides and mounted anatomical sections for display in the laboratory. He conducted us on a tour of wards ranging from recent admissions to hopeless cases, and among other things I learned firsthand how much leprosy looks like tuberculosis and syphilis.

Speech Deviations

For 18 months I observed Japanese and English speech in many types of situations and among many classes of Japanese people. I heard about the same variety of good voices and cases of dysphonia that one finds in the United States. I saw about the same percentage of excellent articulatory mobility and of severe muscular inactivity.

As far as I was able to learn, speech correction is an unknown entity in Japan. Surgical repair of cleft lips can be seen frequently during school visits and among the crowds of children and adults who curiously surround an American vehicle whenever it stops in towns and villages in the interior of Honshu. Japanese friends told me that they knew people who were stutterers, but because communication was made difficult by language barriers, it was hard to elicit understandably accurate accounts.

My first opportunity to study minor speech deviations in the English speech of Japanese individuals was at Johnson Army Air Base, where I visited two classes in English conducted for housegirls during the Spring of 1947.

The 50 girls in the two classes ranged in age from 16 to 25 years, with a few older women included. They came from homes within a fairly large radius of Irumagawa in order to get the coveted jobs with the Americans. Their education was for the most part only elementary school, but a few had attended high school. Their knowledge of English was very limited.

The voices of these Japanese girls were nearly all pleasing. The outstanding deviation was that of guttural quality. Loudness was consistently insufficient, but this is perhaps partly explained by the characteristic shyness of Japanese girls. Vowel production included a persistent production of very short vowels and practically no use of the schwa sound.

Sound deviations were pretty much what one would expect. The sound [w] was omitted in such words as *sweeping, sweet and twelve*. The [v] was often used as a substitute, and [u]or [ʊ] were used initially, such as [ʊl] for *wool*.

Sibilant sounds were made with broad emission and frequently were confused. The [s] became [θ] and vice versa, while [s] was substituted for [ʃ].

The [t] and [d] were dentalized and were substituted for [θ] and [ð]. The [f] was as hard to produce as [l] and [r]. Substitutions included not only the anticipated [h] as used in Japanese ([hitɪ] for fifty) but [p] for [f], [b] for [f], [s] for [f], and [b] for [v.]

Vowel substitutions included [i] for [ɪ], [æ] for [ɛ], [æ] for [ɑ], [æ] for [ʌ], [ʌ] for [ɑ], [ɑ] for [ʌ], [ɔ] for [ɑ], [o] for [ɔ], [ɔ] for [o], [ʌ] for [ɔ], [ʌ] for [ɝ], and [ɔ] for [ɝ]

Consonant combinations were difficult, and especially those of [tw], [kw], [kl], [gl] and [fr].

There were few consonant omissions, but the plosives were slighted occasionally. The unaccented vowel [ɚ] was frequently omitted. Sound additions were surprisingly absent except for the [ŋg] click ([hæŋgɪŋgə] for *hanging*).

My second opportunity for analytical study was in Tokyo among Japanese individuals who were studying English. A brief summary of three cases will serve not only to show speech deviations but the type of peo-

ple with whom I came in most frequent contact:

Case A: S., 23 years of age, the son of a teacher-farmer, had graduated from high school and had taken special work in agriculture which had led to an assignment overseeing a plantation in Java. He had spent one year in the army in Toyko before the end of the war and was subsequently employed as houseboy in homes of American Occupation families. He had studied English but seemed to have forgotten it entirely during the war years. S. was shy about speaking, weighed his thoughts carefully before saying anything, and studied diligently. In the 18 months I knew him he progressed from inability to speak English to success in serving as my interpreter.

S. had a voice that was pleasing in quality and low in pitch. His articulation was impeded by a large, sluggish tongue. He had trouble producing [s] and [z] but mastered both. He had to work hard to learn to use [θ] and [ð], [f], [aʊ] and [aɪ], and worked patiently for months to correct his substitution of [æ] for [ʌ]. His auditory discrimination was good, but he was still having some trouble with [l] and [r] after more than a year of individual work with me.

Case B: N., on the other hand, was my most uninhibited friend in his attempts to speak English, and his vocabulary grew rapidly. His original sound difficulties included substitutions of [o] for [ɔ], [i] for [ɪ], [ʌ] for [æ], [ɔ] for [ɑ], and [ɑ] for [aʊ]. He had no trouble learning [l] and [r], but had to work to learn to use [w]. He omitted final consonants from his words, especially the plosive sounds and [m] and [n]. He had a dentalized lisp, and in spite of normal tongue agility, he was never able in the year he studied with me to fully correct it, nor to keep from confusing [s] and [z,] [ð] and [z], and [θ] and [ð].

N. was about 20. He had been too young to be in the army, but had studied for a year in a mechanical school near Tokyo. He had been partially brought up in the city, but had lived in a village for several years after his father, a tea merchant, moved the family away from Tokyo. N. was a good example of young Japan, freed to a good extent from tradition, eager to learn about democracy and 'studying to become a Christian.' Many times his actions as houseboy would lead me to question his intelligence, and then he would come forth with an acute observation or pertinent question. In group discussions he was a shining light.

Case C: H., around 26 years of age, the daughter of a Tokyo physician now deceased, was a good example of an intelligent student who could easily understand written English but who had practically no ability in understanding and producing spoken English. Even after she had overcome her shyness and had studied speech in my household for more than eight months, she could not express her thoughts with confidence. Part of this inability may have stemmed from the fact that she did not live in my home, but went back to her Japanese environment at four each afternoon.

H.'s pleasant voice was microphonic and remained so largely, I believe, because of her extreme tendency to withdraw. Her articulatory habits were satisfactory except for an inactive jaw which required much exercising. Her [s] sound was as accurate as the most fastidious speech therapist could desire, but at first she used it for [ʃ], [z] and [ʒ]. She substituted [i] for [ɪ], [oʊ] for [aʊ], [aʊ] for [oʊ], [ʌ] for [æ], [l] for [r], [ʌ] for [ɜ] and [ɔ] for [ɑ]. H. was one of the few persons whom I heard insert the schwa sound into English. *It was* became [itəwɔs], and *white bread* [waɪtə-brɛdə]. She also had to work hard to eliminate the [ŋg] click ([lɔŋgə drɛsə]).

Speech Therapy

The two English classes at Johnson Field mentioned above provided my first experience with teaching Japanese students. I served as a supplementary teacher. My activities were voluntary and included those of model, guide, critic, adviser and consultant. My place was in front and to one side of the students where I could observe and take notes, and where I could easily be observed. Both classroom teachers called upon me freely and seemed grateful for my presence.

Mr. I., the first teacher, was a kindly patient Japanese whose spoken English was poor, but whose understanding and teaching techniques were superior. He used as his references an old, battered English grammar printed in Berlin, and a common French-English phrase book. He tried to teach speech and to use a phonetic approach. He attempted such explanations as those of English inflection and phrasing, and of [r] and [l] by placing tongue positions on a sagittal drawing of the head. He tried to get the girls to open their mouths by opening and closing his hand when they spoke.

Mr. H., a young man who was a part-time student in Economics at the Imperial University in Toyko, followed Mr. I. after a few weeks. This man had worked on the Base almost since its installation, spoke English reasonably well and understood with no difficulty. He attempted to be very practical and objective in his teaching, but he lacked sympathy and failed to elicit the rapport so easily obtained by the former teacher.

These housegirls' classes, which were begun early in 1947, met three times a week and each session lasted approximately one hour. The one-thirty o'clock class numbered 15 students, and the three o'clock class between 30 and 35. Attendance was voluntary and free, but depended upon permission of individual employers.

The girls were earnest students, sat quietly on their knees on the straw-mat floor of the tiny, crowded room of the Japanese girls' dormitory, and took careful notes. The majority of them seemed to have little difficulty in writing down the English vocabulary words, but would add inscriptions in Japanese characters. They were diffident about reciting except in unison, and often would giggle and cover their faces with their hands if a mistake were made.

Because of the number of students there was little opportunity for individual attention. A good half of the recitation was done in unison. Much time was spent in learning the tunes and words of songs. Too much time was given to teaching non-essentials, such as the great variety of ways one may greet a friend in English.

The girls were easy to teach, as I found on occasions when the teacher was absent and I took over. One afternoon when I questioned the value of trying to help them because of our language barrier and went home, a committee came to my house to beg me to return and teach them. They were eager to listen to American speech and anxious for opportunity to echo my pronunciation. They liked to identify toys and pictures, and to place them into sound classifications. They seemed thoroughly to enjoy my antics in using pantomime and trying to explain blackboard drawings. They especially liked to have me demonstrate phonetic sounds and symbols, and their acuity in auditory training was most gratifying.

Negative practice and sound contrasts worked well. But games such as 'Speech Rummy,' and 'Speech Bingo,' even if used with a selected group, required too much time in preliminary explanation to merit their use.

It is impossible to determine how much value the three hours a week of instruction gave to the girls on Johnson Field. The classes were a fine supplement to their practical experiences in living with American families, hearing English all day, and learning be-

cause they were eager to please and anxious to keep their jobs. The classes served as a place for them to ask questions, to receive explanations in Japanese, and to get directed auditory training and speech drill.

My teaching experience in Tokyo began early in the Autumn of 1947 and continued until July of 1948. The work was considerably easier than that at Johnson Field because the students attended English school at other times, because they had worked for the Americans a longer period of time, and because they could understand a good deal of what I said.

The chief purpose of our class was to learn to speak accurately. We met on an average of three times a week in my home for at least an hour each time. There were never more than six people present. I had to do a good deal of orientation work and found this to be the most easily achieved by constantly referring to the following outline:

ENGLISH
(American English)

Orthography	Phonetics
Sight	Sound
Reading	Speech
Letters	Hearing
Alphabet	Alphabet
26 Letters	40 Sounds

Both my students and I built looseleaf notebooks which became our text and our measurement of progress. We kept all materials organized under various sections and this helped in keeping our class work fluid and our program open to changes suggested by specific circumstances and events. Under the section on Phonetics we kept separate pages for each vowel and consonant sound so that we could add words as they came up for vocabulary study. We interpreted Orthography to include a minimum of study on grammar and an answer section to questions brought in from English night school. The subdivision on Speech included sketches of faces demonstrating jaw, lip and tongue calisthenics, and exercises to aid in ear training and sound discrimination. To aid in speech synthesis, we kept sections for reading and poetry, conversation and discussion.

Because of unavoidable language barriers, I had to use much demonstration in teaching and a minimum of explanation. Mirror work, blackboard sketches and explanation of the importance of jaw movement in speech assumed importance, for example, only when we added the sound of [ɑ] and words from the vocabulary list including the [ɑ] sound. Word lists had to be comprehended, and to include only one difficult sound if they were to be effective. By way of illustration, in differentiating between final [ts] and [s] the words *gets—guess* would be helpful, whereas *plates—place* would be too hard because of the [pl] combination.

Never have I been more grateful for a knowledge of phonetics than in teaching the Japanese. The students were quick to learn and use the phonetic symbols and seemed to get more out of analysis of phonetic script than any other single teaching device. Phonetics was an invaluable aid in divorcing their learning from the traditional visual emphasis which so influences and confuses the Japanese in their attempts to speak English.

The problem of teaching speech synthesis was especially arduous. It was hard to find material that was easy enough to translate, yet of sufficiently adult level to maintain reading interest. Books for English study on the Japanese market were too antiquated and too full of symbolism to be practical for people whose backgrounds rendered laborious even a comprehension of everyday American life. Radio texts which aided radio classes in English were helpful but did not contain the Japanese version. Poetry had to be limited to the three

to five-line verses with translations which appeared frequently in the *Nippon Times*. Popular booklets on American movies which gave the story both in Japanese and English were of value, especially if the movies were currently running in the local theatres.

Our classwork yielded good lessons in semantics. One illustration will suffice. The word *khaki* may mean a type of cloth, an oyster, a persimmon or 'car keys' to Japanese students, depending upon syllabic stress and usage.

One of the most difficult problems in teaching was to elicit spontaneous speech. Instead of assigning short practice talks, it was necessary to tell the class to ask questions until the individual speaker could finish recounting his story or experience. Even a colored action advertisement from *Life* magazine could be used in directing attention away from the problem of speaking, and it might result in an interesting and informative discussion on life in Japan as contrasted with life in America plus the production of good [s] sounds. By the end of the year we were discussing the philosophy of democracy.

One of the most enjoyable parts of our classroom work was the study of conversation. Many opportunities for practicing good speech were found in projects on the art of asking questions, giving directions, answering the door, welcoming guests, and using the telephone.

The Japanese with whom I worked were avid students. They would spend long hours on translations, re-write letters a half-dozen times cheerfully and practice speech exercises frequently enough to please the most exacting speech therapist. They worked well even in the dullest situations, but if a little motivation were added they became enthusiastic. Ear training became fun with as simple a device as the use of different colored strips of paper. Speech games were a delight, and the problem was to terminate a game such as 'Speech Dominoes.' Pictures were enjoyed, and the singing of American songs brought lusty harmonizing.

Conclusion

Similarity in speech deviations was to be found in the majority of Japanese whom I heard practicing English speech, both in conversational and in study situations. There also was a great deal of consistency in deviation within the individual person. It is obvious but noteworthy that the same sounds that are considered hard for children to master in the developmental process of speech, and which are troublesome to other nationalities, are found to be difficult by Japanese students of American speech.

Teaching speech to foreign students whose language one does not understand is a valuable experience for a speech therapist. Awareness of the frailty of communication as a process is enhanced. Realization of how few words are necessary in order to put across meanings is increased. Effective shortcuts in demonstration and pantomime have to be learned. Individual teaching techniques must be re-evaluated. The art of repetition and the quality of patience must be more expertly mastered. Knowledge that personality characteristics are individual, but universal, must increasingly be accepted.

Teaching the Japanese can spoil a speech therapist. At least the Japanese with whom I came in contact during a stay of 18 months in Japan were such enthusiastic and consistent workers, such sincerely interested and appreciative people, and such satisfactory students in terms of making excellent speech improvement, that I was amply repaid in pleasure for every moment I spent working with them.

The Effect of Maturation upon Defective Articulation in Grades Seven through Twelve

Helen K. Sayler

ALTHOUGH considerable research has been done as to the type and variety of articulatory defects found in the school population, comparatively fewer studies of this kind have been made of the pupils in the junior and senior high schools than of those in the elementary grades. In this study, grades 1 through 6 will be classified as elementary and grades 7 through 12 as secondary.

A survey of the special conditions of children in grades 1 through 6 was made by Roe and Milisen (*5*) in 1940. The present study continues the same sort of survey in grades 7 through 12, with the following purposes:

1. To give detailed information regarding the speech condition of a large unselected sample of pupils.
2. To determine the kind and extent of errors in the articulation of speech sounds of pupils in grades 7 through 12.
3. To come to a decision from the data gathered as to whether there is a need for speech improvement and for speech correction in these grades.

Similar studies have been made by Carhart (*1*) and Wallin (*6*), who used the questionnaire method, and by Evans (*2*) and Morris (*4*), who tested each child individually. In the present study the individual testing method was used. No effort was made to classify each child as a defective or normal speaker. The specific purpose, rather, was to describe as accurately as possible the way in which each child responded to each of the specific sounds tested.

Helen K. Sayler (M.A., Indiana, 1946) is Director of Special Education, Huntington, Indiana, Public Schools. This article is based on a thesis directed by Dr. Robert Milisen.

SUBJECTS

The subjects of this survey were 1998 pupils in grades 7 through 12 in six cities and towns in Idaho: Aberdeen, Boise, Rupert, Burley, St. Anthony (Idaho Industrial Training School), and Twin Falls. In Boise and Twin Falls, random unselected classes from different grades were tested. In Aberdeen, Burley, Rupert, and St. Anthony all pupils in the grades concerned were tested. With the exception of the tenth grade, the number tested in each grade was approximately equal (Table 1). The number of boys and the number of girls in each grade were nearly the same.

None of the pupils had received speech correction or specific speech training in the schools. There was no attempt to select grades for testing in which the pupils were of exceptional

TABLE 1. Distribution of number of pupils tested according to grade and sex.

Grade	*Boys*	*Girls*	*Total*
7	173	186	359
8	170	160	330
9	155	180	335
10	121	155	276
11	179	184	363
12	157	178	335
Totals	955	1043	1998

ability nor grades in which the pupils had noticeable speech disorders.

Materials

A typewritten list of 56 sentences was read orally by each child tested. In order that recognition would present no difficulty in the test, the words were chosen from the Core vocabulary and the Thorndike lists. No word used was above the third grade level. Seventeen commonly missed consonants (the same as those selected by Roe and Milisen) were presented in three positions: initial, medial, and final. Three consonants were presented in two positions: [w] and [ʍ] in the initial and medial positions, and [ŋ] in the medial and final positions. One blend [st] was presented in three positions; one blend [fl] was presented in two positions; and three blends [sk], [dr], and [str] were presented in one position each. There was but one key word in each sentence. Key words were in accidental positions in the sentences.

Individual test sheets which included space for data concerning the pupil's name, age, grade, grade repetitions, and home town were used for recording results. Spaces on the test sheet were numbered to correspond with the numbers of the sentences on the list which the pupil read. Pictures representing the different sounds were available in the event of extreme reading disability. In no instance, however, was it necessary to use these pictures. A room as free from noise and distractions as conditions permitted was provided in each school.

Procedure

Each individual filled in the case history data in the space provided on his sheet and brought it with him to the testing room. In order to expedite the administration of individual tests, the following general instructions as to test procedure were given orally by the examiner to the entire class before testing began:

1. The sentences, to be read orally, are arranged in three columns on the sheet to be handed you. Begin at the top of the left hand column and read down, each sentence in order, before starting the next column.
2. Read at your regular rate of speed.

Several pupils came to the test room at the beginning of the testing and waited at the back of the room or in an ante-room, while one individual was tested. At the completion of a test, the pupil returned to his classroom and another was sent in to await his turn. Rapport was excellent. Pupils were interested and cooperative. Many were frankly curious and the examiner was asked in several schools to explain the purpose of the test after the survey was completed there.

As the pupil being tested read each sentence, the examiner recorded the results in symbols on the data sheet, which was screened from the testee. No oral stimulation was given; in no case were the key words or other words pronounced for the pupil, nor were questions asked which would make possible an imitation of the correct sound.

If no error was made, a check was made in the proper space. A sound substitution was indicated by the appropriate phonetic symbol. An omitted sound was indicated by an *O* in the space provided. Indistinct sounds were recorded in four categories, according to the degree of the indistinctness present in the opinion of the examiner.

Results

The improvement in sound errors as a result of maturation was found by Roe and Milisen (*5*) to be less in the intermediate than in the primary grades. Data in the present survey show very little improvement between grades 7 and 10 and some improvement between grades 10 and 11 (Table 2). Grades 11 and 12 were essentially the same. In any event only a slight amount of improvement is to be ob-

TABLE 2. Mean and standard deviation of errors per pupil by grades, irrespective of sex.

Grade	*No. of Pupils*	*Mean*	*S.D.*	*No. of Errors for the Pupil at each Extreme of Grade*	
7	359	3.92	3.92	0	36
8	330	4.31	3.45	0	16
9	335	4.54	4.30	0	34
10	276	4.38	2.97	0	30
11	363	3.34	4.10	0	27
12	335	3.25	3.16	0	41
Total	1998				

served from grades 6 through 12. Table 2 shows little difference in the average number of errors for any of the grades. The tenth, eleventh and twelfth grades show a slight reduction over the seventh, eighth and ninth, but the improvement was small and not consistent from the seventh through the twelfth grades.

No significant difference was found between the number of errors for boys and for girls (Table 3.) The greatest difference was in grade 9. This was a small difference, however, which is undoubtedly due to accident of the sampling. It is interesting to note, however, that in all but the twelfth grade the boys made more errors than the girls. The difference ranged from .22 to 1.11 errors.

These figures should be compared with the survey made by Louttit and Halls (*3*) in which the ratio of boys to girls as to defective articulation was 1.5 to 1.0. Carhart (*1*) reported a still greater difference, with variation between boys and girls averaging 5.6%. Morris (*4*) and Evans (*2*) found no significant sex difference in the number of articulatory defects.

The critical ratio of the difference of errors between grades 7 and 8, grades 8 and 9, and grades 9 and 10 is small (Table 4). This would indicate that the differences in the numbers of errors made in these grades are not significant. The difference in the mean number of errors between grades 10 and 11 is statistically significant. The difference between the mean number of errors made in grade 7 and grade 11, however, is not significant. Therefore the difference in the mean number of errors between grade 10 and grade 11 is due, probably, to a peculiarity of sampling rather than to an improvement between these grades.

The percentage of pupils in each of

TABLE 3. Mean and standard deviation of errors per pupils according to grade and sex.

Grade	*Boys*			*Girls*		
	No. of Pupils	*Mean*	*S.D.*	*No. of Pupils*	*Mean*	*S.D.*
7	173	4.24	3.62	186	4.02	3.62
8	170	4.51	3.38	160	4.09	3.53
9	155	5.14	3.42	180	4.03	4.94
10	121	4.67	1.94	155	4.17	3.57
11	179	3.68	4.13	184	3.00	4.05
12	157	3.15	2.52	178	3.34	3.64

TABLE 4. Average number of errors per pupil in each grade, with the difference in the average number of errors between grades and the critical ratio (N=1998).

Grade	*Mean No. of Errors*	*Difference*	*Critical Ratio*
7	3.92		
8	4.31	.39	.72
9	4.54	.23	.77
10	4.39	.15	.54
11	3.34	1.05	3.75
12	3.25	.09	.32

the six grades making some error on the sounds tested, irrespective of severity, type, or position in the word is shown in Table 5. This table indicates that the number of errors in the following sounds decreased consistently from the seventh through the twelfth grades: [f], [d], and [t]. The sounds which showed most improvement were [ð], [f], [z], and [t]. The following sounds showed a decrease but this decrease was not consistent: [θ], [r], [l], [dʒ], [k], [g], and [ʍ]. The sound which improved most was [f]. The following sounds showed no decrease or no consistent change: [tʃ], [ʃ], [v], [w], and [b]. The blends showed a general tendency to improve but this improvement was not consistent.

Each speech sound tested is ranked in Table 6 according to the per cent of errors made. The table shows that several sounds were missed from nine

TABLE 5. Percentage of pupils in each grade making some type of error on the sounds tested.

Sound	*Percentage of Error per Grade*					
	7	8	9	10	11	12
[s]	4.7	6.1	3.3	4.4	5.5	5.7
[z]	68.6	72.4	72.4	72.2	70.0	58.5
[θ]	5.6	8.8	7.8	8.0	4.1	4.2
[ð]	50.2	54.6	75.3	64.5	50.2	42.1
[r]	3.1	4.9	3.6	3.6	1.9	2.1
[l]	7.5	7.6	5.7	3.6	3.0	6.0
[dʒ]	3.3	2.6	1.5	2.9	1.7	2.6
[tʃ]	21.2	21.5	26.6	20.6	25.9	26.3
[ʃ]	1.4	.6	1.2	2.5	.3	1.2
[k]	5.6	4.9	5.4	5.4	2.5	3.3
[g]	8.4	8.5	11.6	12.3	4.7	2.6
[f]	14.8	11.8	7.2	8.0	3.6	3.3
[v]	27.4	30.9	48.1	48.2	33.9	26.9
[w]	.6	1.8	1.8	1.4	1.1	.9
[ʍ]	40.7	43.7	38.8	49.7	33.9	35.2
[ŋ]	17.5	18.5	14.9	11.6	1.7	12.2
[b]	5.3	6.4	9.3	6.2	7.4	5.7
[p]	3.3	2.7	4.5	2.2	2.5	2.4
[d]	4.5	3.6	2.7	1.4	.8	1.5
[t]	11.4	6.4	9.9	7.6	6.6	3.6
[st]	18.1	17.6	13.7	15.2	10.2	10.4
[sk]	10.6	9.7	8.4	9.1	4.4	2.6
[str]	2.2	2.4	2.1	1.4	1.1	2.1
[dr]	.6	.6	1.5	1.8	.3	.6
[fl]	1.7	2.7	1.8	2.5	1.1	.6

TABLE 6. Sounds ranked according to frequency of errors.

Rank	*Sound*	*% of Errors*
1	[ʍ]	29.6
2	[z]	28.9
3	[ð]	19.6
4	[v]	12.6
5	[tʃ]	9.3
6	[ŋ]	9.2
7	[st]	5 13
8	[sk]	4.0
9	[f]	3.1
10	[g]	2.8
11	[s]	2.7
12	[θ]	2.6
13	[l]	2.3
14	[b]	2.2
15	[t]	2.0
16	[str]	2.0
17	[k]	1.5
18	[r]	1.4
19	[p]	1.0
20	[d]	1.0
21	[dʒ]	.9
22	[fl]	.9
23	[dr]	.9
24	[w]	.7
25	[ʃ]	.6

per cent to 29 per cent of the time and that none of the sounds was formed correctly by all of the pupils all of the time. These figures indicate clearly the need for some type of consistent speech training for the pupils in secondary schools. While Table 7 indicates that the kinds of errors which affect the intelligibility of speech are fewer in this survey than in Roe and Milisen's study (5), there is still a great need for general speech improvement in grades 7 through 12.

After the elimination of such minor errors as the substitution of the voiceless for the voiced sound, as [w] for [ʍ], the speech sounds are ranked in Table 7 as to number of errors. This table is perhaps of greater value to the speech pathologist than the preceding one since it presents only those errors which are likely to destroy intelligibility of speech. Results in this table were contrasted with results in a similar table in Roe and Milisen (5). Fewer errors were found in the following sounds for the seventh to twelfth grades inclusive, when compared with the errors found in grades one to six, inclusive: [ð], [s], [θ], [t], [k], [d], [dʒ] [ʃ], [g]. No material improvement was shown for the following sounds: [z], [v], [tʃ] [ŋ], [ʍ], [f], [l], [b]. These comparisons show that some sounds will develop with maturation but will not be completely corrected by that factor. Other sounds are influenced but slightly by maturation which takes place during school years. Hence it is demonstrated

TABLE 7. Sounds ranked according to frequency of errors after eliminating minor substitutions of voiced or voiceless sounds.

Rank	*Sound*	*% of Errors*
1	[z]	17.4
2	[v]	9.3
3	[tʃ]	9.3
4	[ŋ]	9.2
5	[ð]	9.0
6	[ʍ]	7.1
7	[st]	5.1
8	[sk]	4.0
9	[f]	3.1
10	[s]	2.7
11	[θ]	2.6
12	[g]	2.4
13	[l]	2.3
14	[b]	2.2
15	[t]	2.0
16	[str]	2.0
17	[k]	1.5
18	[r]	1.4
19	[p]	1.0
20	[d]	1.0
21	[fl]	.9
22	[dr]	.9
23	[dʒ]	.8
24	[w]	.7
25	[ʃ]	.6

that if we wish to have our children educated to speak clearly there is need for speech training to supplement maturation.

Conclusions

1. There was a slight decrease in the mean number of articulation errors from grade 7 to 10. Since the amount of improvement was so small it would seem to indicate that maturation does not reduce the number of errors in the secondary grades to the extent that it does in grades 1 through 4.

2. The speech sounds most commonly missed were four fricatives: [ʍ], [z], [ð], and [v].

3. Single consonants were missed in the following order: [ʍ], [z], [ð], [v], [tʃ], [ŋ], [f], [g], [s], [θ], [l], [b], [t], [k], [r], [d], [dʒ], [w], [ʃ].

4. There were observed 60 omissions; 3,652 substitutions, and 4,110 indistinct sounds. Although many indistinct sounds were mild, approximately two-thirds were classified as severe.

5. While maturation appears to result in fewer speech errors on the sounds [ð], [s], [θ], [t], [k], [v], [b], [dʒ], [ʃ], and [g], the difference is not at all marked.

6. There was no significant difference in the average number of errors made by boys and girls who had articulatory defects. There were, however, slightly more boys than girls who made errors in all grades but 12. This would appear to confirm the opinion of Evans (*2*) and Morris (*4*) that sex is not a significant factor in the production of articulatory defects.

7. The results of this survey indicate that there is a need for corrective work in the secondary schools. This would seem especially true in schools where there has been no speech correction in the preceding grades. Those errors which an individual has when he enters the secondary grades tend to persist in spite of maturation.

8. The results of this study should not be interpreted as indicating the errors which occur in *propositional* speech. It does give specific information as to how the individual articulates when he is controlling his speech and paying attention to process of speaking rather than the content of speech.

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A Study of the Tendency to Resist Tongue-tip Activity

Esther Horowitz

THE tendency towards multiple interdentality (interdental articulation of [d], [t], [n], and [l], in addition to an interdental lisp) has been discussed by Beebe and Kastein (*1*). In Froeschels and Jellinek's study (*2*) of 254 cases of interdentality, 230 continued to maintain the interdental position for [s] while bending the head backward. This was in contradistinction to people with normal speech, who changed the correct [s] into a palatal one when the head was suddenly bent backward.

Is there a converse tendency to resist protruding or raising the tip of the tongue in the production of sounds which require such activity, and where no obvious physical defect, such as paralysis, or tongue-tie, exists? The purpose of this study was to determine whether children who substitute the labio-dental [f] and [v] for the lingua-dental [θ] and [ð] also have a tendency towards lalling, the production of the lingua-alveolar [l] with the back of the tongue, instead of with the tip of the tongue.

Subjects

The subjects were 61 children attending speech correction classes in five public elementary schools in New York City, and 135 children who had been tested and found to have defective [θ] and [ð] sounds, but who had not yet been placed in speech correction classes. These latter children were in the kindergarten and first grade, and ranged in age from 4½ to six years. The former children were enrolled in the second to the sixth grades, and ranged in age from seven to twelve. All of the children in this study substituted [f] and [v] for [θ] and [ð]. All of these children were tested to see what other speech defects, if any, they exhibited.

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Results

The percentages of other speech defects of the children in Group I, (the children receiving speech correction) and in Group II (the children not enrolled in speech correction classes) are shown in Table 1, as are the percentage of other speech defects of the totals of both groups.

The secondary defect found to exist to the greatest extent was lalling. This was true in all three categories, viz. in Groups I, II, and the total of both. The percentage of children with [l] defects is much greater among the group receiving correction than among the children who were not receiving correction. This may be due to the fact that the substitution of [f] for [θ] is not necessarily a defect, since more than half of the children who have this substitution do not make the same error by the time they have reached the second grade. Where they do continue to substitute the labio-dental for the lingua-alveolar sounds, however, there is a great likelihood that at least one other speech defect will exist. By far the greatest number of children (72.1 per cent) exhibited a defective [l] sound. Since [θ] and [ð] demand a slight protrusion of the tongue, and [l] requires extension and direction of the tongue,

TABLE 1. Percentage of other speech defects exhibited by children who substituted [f] for [θ] and [v] for [ð].

Speech Defect	*Group I**	*Group II†*	*Total*
Defective [l]	72.1	31.1	43.9
Defective [r]	29.5	21.5	24.0
Lingual Lisp	26.2	17.0	19.9
Substitution of [t] for [k]	14.8	3.7	7.1
Stuttering	6.6	0.7	2.6
Lateral Lisp	4.9	5.1	5.0
No defect	14.8	48.1	37.8

* Children enrolled in speech correction classes.
† Children not enrolled in speech correction classes.

it would seem that this large percentage is more than merely co-incidental.

If the [θ] - [ð] defect were due solely to lack of discrimination among sounds of high frequency, it would seem likely that a large percentage of these children would have defective sibilants. Yet only 26.2 per cent of these children lisp, as compared with 72.1 per cent whose [l] is defective. On the other hand, none of the children tested were tongue-tied.

What, then, is the cause of this reluctance to extend the tongue-tip? Is this tendency to lack of muscular activity due to a physical or a psychological factor, or a combination of both? The answer, when discovered, may be found to be closely related to the problem of interdental lispers who protrude their tongues, even when their heads are thrown back.

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Audibility of the Voiceless Consonants as a Function of Intensity

Gilbert C. Tolhurst

THIS is a report of a pilot study which was planned to investigate the relationships between one of the physical characteristics of speech sounds, their intensity, and the way in which they are perceived, especially with respect to the particular combination of equipment which was employed and with respect to the significance of certain psychophysical measurements.

The study was concerned specifically with the relationships existing between the intensity of speech sounds and two types of audibility thresholds. The first, termed a threshold of detectability, was an attempt to define the minimum intensities at which the presence of speech sounds can be detected without regard to whether they can be identified as phonetic entities (*7*). The second, termed the threshold of recognition, was concerned with the minimum intensities at which the speech sounds may be correctly identified as phonetic entities.

The particular sounds chosen for this investigation were the nine voiceless consonants, [s], [f], [ʃ], [h], [θ], [t], [k], [p], and [tʃ]. These sounds were chosen because among them are sounds which are of particular interest to the speech correctionist and also because they are sounds which tend to be particularly difficult for persons with certain types of hearing losses (*9, 1, 5, 6*).

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Equipment and Procedure

Figure 1 shows how the testing equipment was installed in soundproofed rooms. The main units were placed in a small room from which the sounds were called and a large room in which the observers listened.

The listening circuit consisted of: the caller's microphone; a main amplifier whose frequency response varied less than plus or minus 1 decibel over the range of 30 to 15,000 cycles per second; an earphone circuit consisting of a Daven constant impedence attenuator capable of attenuating 110 decibels in steps as fine as one db, a matching transformer, and six matched PDR-8 Permaflux earphones arranged for monaural listening.

A monitoring circuit made it possible for the callers to secure a relatively constant input for the speech stimuli.

Precautions were taken to reduce distractions influencing the observers to a minimum and to insure, as far as possible, that their attention was maximal at the time each stimulus was presented. For this latter purpose a small warning signal light was used which alerted the observers for each stimulus presentation (*10, 3*).

The speech sound materials used as stimuli were nonsense syllables formed from the nine voiceless consonants and the vowel [ʊ] into consonant-vowel-consonant (CVC) syllables, i.e.,

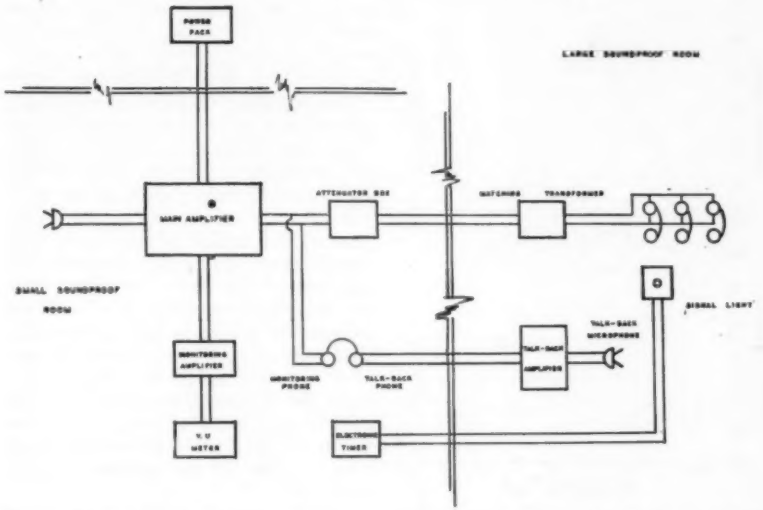

FIGURE 1. Schematic diagram of the instrumentation and the speaker-listener relationship. Caller's microphone, W.E. 630-A; earphones, Permaflux PDR-8.

[θʊp]. Certain parts of the procedure, however, required the use of CV and VC types as well as the consonant-vowel-consonant variety, i.e., [tʃʊ], [kʊ], etc., or [ʊʃ], [ʊt], etc.

The constant vowel [ʊ] was used because it was assumed that the intensity levels of the consonant adjoining this or any one vowel would remain relatively constant to the vowel, if the imput intensity of the vowel was kept relatively constant. This consonant-vowel relationship should remain very similar providing the vowel remains unchanged.

The syllables were presented by monitored live voice at randomized intensities by two similar male voices. Evidence showing a high degree of constancy of input was obtained by means of two different sets of measures. The first measure, obtained on one voice only, was made with the Sound Apparatus Company High Speed Graphic Level Recorder. Measures of the average differences in intensity between the vowel [ʊ] and each consonant were also secured with this apparatus. The second set of measures, obtained from both voices, were voltage values of the whole syllable obtained from a Hewlitt-Packard Vacuum Tube Voltmeter connected across the earphone circuit. The standard deviation for both voices on all measures was less than 1.5 decibels.

The syllables were presented to 22 observers having normal hearing as tested by pure tone audiometer. The observers were given full instructions as to the randomized consonant sounds for which they were to listen, the judgments to be made, the type of stimuli to be employed, that the intensities would vary in a random manner and that the sound stimuli would be presented immediately after the two-second warning signal light was extinguished (*2, 4, 8*).

Two quite distinct procedures were employed to determine (1) a threshold of detectability and (2) a threshold of recognition. Three lists of

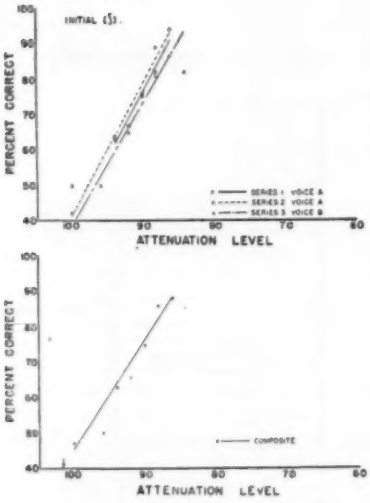

FIGURE 2. Per cent correct detectability judgments of initial [ʃ] plotted against decibels of attenuation. Straight line functions have been fitted to each set of points by the method of least squares. The lower graph is the composite of all judgments. The vowel threshold is shown by the arrow on the abscissa to permit convenient reference.

sound stimuli were required to define the detectability threshold. The observers were to indicate only the presence or absence of the particular part of the syllable. The first list contained syllables in which the initial consonant was missing half of the time. The second list contained syllables in which the final consonant was missing one-half of the time. The third was constructed so that one-half of the time the whole CVC syllable was present or absent at the time when a stimulus presentation was expected by the observer.

For the recognition thresholds the observer wrote the sounds phonetically as they heard them. They also indicated when they could not recognize the sound in either of the two positions. Threshold was defined as correct recognition one-half of the time.

RESULTS

Detectability: The results from each detectability series were plotted graphically with the ordinate values in terms of percentage of correct responses and the abscissa values expressed as decibels of attenuation below the fixed gain of the sound system used. The detectability threshold function of each sound for each voice was plotted separately and then the combined judgmental values at each attenuation level was plotted on a second graph. (For an example, see Figure 2.) Since the detectability judgments had a 50-50 possibility of being correct by chance alone, the 75% correct judgment was to be the threshold value (*10*).

The threshold of the vowel, 101.7 decibels of attenuation, appears to be reasonably well determined. The lines

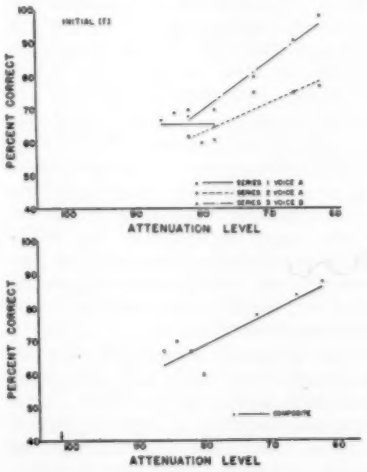

FIGURE 3. Per cent correct detectability judgments of initial [f] plotted against decibels of attenuation. Straight line functions have been fitted to each set of points by the method of least squares. The lower graph is the composite of all judgments.

of best fit, as found by the method of least squares, representing both voices were close together, had similar slope coefficients, and the dispersion about the line of best fit was small (*11*). The small arrow on the abscissa of each sample graph at 101.7 decibels of attenuation gives the relationship of the consonant threshold in each instance to the vowel threshold.

Examples of the consonant sounds for which the detectability thresholds seem fairly well defined are the [s], [tʃ], [ʃ], and the [p] in the final position. Figure 2 is an example. These sounds also had good agreement for each of the comparisons made. Certain other sounds do not appear to be so clearly defined, such as the initial [f], the initial and final [θ], and the final [k]. Figure 3 is an example of these latter sounds.

The slope values of the detectability function show, in general, that they are related to the precision with which the detectability thresholds were determined. Figure 4 shows the resultant data of the detectability thresholds in graphic form. The attenuation values required to reach the thresholds of detectability varied systematically from one consonant to another in both

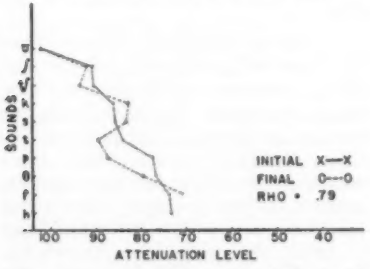

FIGURE 4. Detectability thresholds in the inital and final positions of each of the voiceless consonants from the thresholds obtained from the composite threshold functions. The abscissa values are in the decibels of attenuation. The ordinate positions of the consonants are in the relative amounts of attenuation necessary to reach threshold in the initial position.

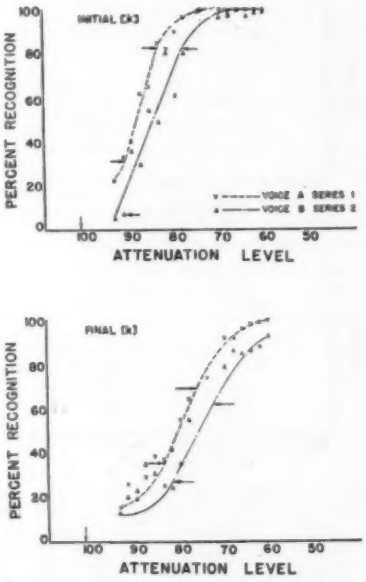

FIGURE 5. Per cent correct recognition judgments plotted against decibels of attenuation. The upper graph represents the function for the initial [k] for both voices. The lower graph shows the recognition function for the final [k]. The portion of each curve between the arrows is a straight line which was fitted by the method of least squares; the remaining curvilinear portions by inspection. The arrow on the abscissa indicates the vowel detectability threshold.

the initial and final position. In general, however, the sounds for which large amounts of attenuation were required to reach the threshold in the initial position were those requiring similar large amounts in the final position. The [ʃ], [tʃ], etc., sounds require more attenuation in both positions, while the [θ] and [f] needed less attenuation in both positions. Certain consonants, for example the [k] and [p], show less agreement of threshold values with respect to the two positions. The sound [k] in the initial position required greater attenuation than in the final position, while

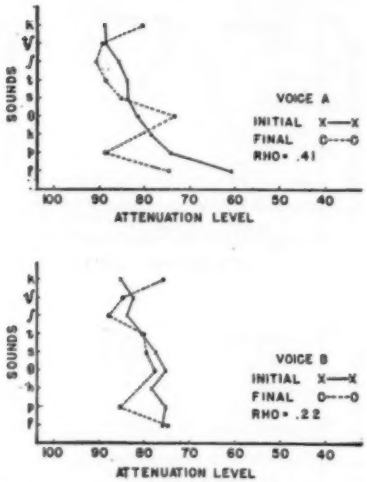

FIGURE 6. Recognition thresholds, in the initial and final positions, of each of the voiceless consonants. The results obtained from each voice are plotted separately. The abscissa values are in decibels of attenuation. The ordinate positions of the consonants are in relative amounts of attenuation necessary to reach threshold in the initial position for voice A.

for [p] the difference was in the opposite direction. Yet a rank-difference correlation of .76 was found between the detectability thresholds in the initial and final positions.

A Spearman rank-difference correlation was computed between the ranking of the relative intensity levels, obtained from the High Speed Graphic Level Recorder, and the rankings of the detectability thresholds. A rho of .82 was found for the sounds in the initial positions and a rho of .88 for the final positions, indicating a positive relationship between intensity rankings and the detectability threshold judgments (*10, 11*).

Recognition: Figure 5 is an example of the curves representing the recognition threshold function. Curves for each voice were plotted separately. This was due to the fact that the group of observers who listened to one voice during the recognition series was not identical to those who listened to the other voice. The abscissa values are the same as in the detectability plots, but the ordinate values are in terms of per cent correct recognition. Since the portion of each curve extending some distance either way from the 50% point appeared to be essentially rectilinear, straight lines were fitted to these middle portions by the method of least squares. The curvilinear portions of each curve were fitted by inspection. Although the curves appeared to approach a normal ogive, the limited data seemed insufficient to justify the use of the Phi-Gamma function (*10, 11*).

There was a substantial amount of agreement between the two curves for the two voices in respect to various comparisons made. The principal exception to this general statement, being the initial [f], a threshold difference of some 15.2 db. The data show that the most probable explanation for this difference was that the two voices articulated the [f] in different manners. The errors in listening differences would make an interesting continuation of the present study, and which it is hoped may be reported later.

A comparison of the rank order of the threshold judgments for the two voices, however, emphasized the similarity in results for each, with .92 for sounds in the initial position and .91 for the final position. There was a consistent tendency for one voice to require, on the average, 1.8 decibels more attenuation than the other voice to reach the recognition thresholds. This difference is probably a reflection of the 2.3 decibels difference between the voices found during the voltage measurements mentioned previously.

Figure 6 indicates that the values found for the threshold attenuation levels for both voices were generally greater for the final consonants than

for the same sounds in the initial position. However, the data show that the same general inversions of position for the [k] and the [p] found in the detectability judgments were true of the recognition threshold judgments. These and other smaller changes indicate that the recognition thresholds were not independent of syllable position.

The differences between recognition and detectability thresholds, in general, were relatively small and appeared unsystematic, occurring in both directions. The lack of systematic difference, however, may possibly be due to errors of measurement. The data, therefore, did not indicate a real difference between the amounts of attenuation required to reach the detectability thresholds and the corresponding amounts for the recognition thresholds.

Conclusions

1. From the relative intensity measures made in this study and the manufacturer's calibration curves for the earphones, it was possible to obtain calculated intensity levels for all sounds. The differences between the calculated intensity levels and the threshold attenuation levels were small and in both directions. While the calculated measures were relatively gross and must be considered as rough approximations, they were the best values that could be obtained with the equipment available. It seems tenable to conclude, therefore, that the thresholds for the voiceless consonant sounds, as measured by present technique, were found at very low intensity levels.

2. The data obtained from the two different voices appear to be highly similar. This similarity was shown in the closeness of the threshold values for the two voices as well as high agreement of the fitted slope values for both detectability and recognition.

3. The detectability and recognition type judgments were found to yield highly similar threshold values for most of the sounds studied. Most of the differences were small and varied in direction. The data, obtained by the present methods, do not indicate a real difference between the two judgmental thresholds for the sounds studied.

4. The assumption that all sounds have audibility functions independent of their positions in the syllables appears unfounded in the light of the present data. The sounds showing the greatest change due to syllable positioning are the [k] and [p].

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Natural Frequency, Duration, and Intensity of Vowels in Reading

John W. Black

STUDIES of the characteristics of vowels typically treat a single aspect of the sound, their quality, frequency, or intensity. The points of departure in this study were: (1) to determine intensity, duration, and frequency from the same samples of vowels; (2) to apply the techniques of analysis of variance to the measures of each of these attributes; (3) to investigate interrelationships among the three characteristics.

PROCEDURE

Forty-two males read 11 words into a microphone: [tip], [tɪp], [tep], [tɛp], [tæp], [tɑp], [tɔp], [tʌp], [top], [tʊp], [tup]. The speakers (S's) were men who had reported for training as military pilots. Twenty-four were graduates of the Naval Academy and the remaining 18 had completed their second year in college. Each S (1) practiced the words under direction, (2) spoke from a standing position in a sound-treated room with a constant horizontal distance (10″) between his lips and the microphone, (3) read the words at five-second intervals (viewing a 10 sec. sweep-hand timer and saying a word each half sweep), and (4) inhaled between each pair of words. The order of words was varied systematically.

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The microphone led to an amplifier that fed both a disc recorder (8N, Presto) and a graphic level recorder (PL-E, Sound Apparatus Company; 50 db potentiometer). The level recorder provided measurements of intensity and duration. The disc recordings were copied, somewhat above normal level, to magnetized tape. The copies were measured for frequency and duration.

The four sets of measurements, including two of duration, were obtained in the following manner: (1) The peak vertical displacement of the graphic recorder stylus was used as an indication of the peak intensity of the vowel in the word. This was read in db directly from the wax-coated paper of the level recorder. It presumably represented r.m.s. voltage. (2) The duration of the vowel was also calculated from this record. The paper passed the recording stylus 50 mm. /sec. The length or horizontal dimension of the tracing of the deflected stylus was assumed to indicate the duration of the word, and the only varying element from sample to sample for a single S was the vowel. (3) The magnetic properties of tape recordings were utilized in determining the frequency of the vowels. Each sound was spotted on the tape, and the portion of the tape that contained the word was immersed in iron filings. The filings arranged themselves in striations, crosswise of the tape, sufficiently plainly to be counted. The speed of the tape through the recording head was determined. The total striations (sound waves) in the vowel

TABLE 1. Summary of analyses of variance for measures of frequency, intensity, and duration of 11 vowels.

Source of variation	*d. f.*	*Mean square: frequency*	*Mean square: intensity*	*Mean square: duration (magnetic tape)*	*Mean square: duration (level recorder)*
Speakers	15	63.0	541.2	938.4	59.5
Vowels (v)	10	12.2	18.4	669.6	36.0
Remainder (r)	150	1.05	5.31	53.2	3.03
F*, v/r		11.62	3.47	12.59	11.88

*1%, 10 and 150 d.f., 2.44.

could be counted and the distance they occupied on the tape measured. Frequency was computed from these measures.[1] (4) The length of the magnetized portion of the tape was measured for another determination of duration.

The disc recordings of the words as read by the 42 S's were heard by a panel of three teachers and two students of speech and one stenographer. Atypical pronunciations were discarded. Unanimity among judges was the criterion for retaining the item. Forty-seven of the 462 pronunciations were rejected. The faulty pronunciations arose from 26 of the 42 S's, leaving 16 who had produced all 11 vowels correctly.

[1]As a check on the reliability of this method of measurement, phonelegrams were made subsequently of the vowels and frequency re-computed. Median discrepancy in the two measurements was 4 c.p.s./vowel. There was no significance between the mean frequencies for any vowel as determined by the two methods.

Subsequent to this experiment the writer has noted other studies that utilized the magnetic properties of recorded tape. (cf. *Sound Tips* (4), or Murphey and Smith (3).) The carbonyl iron recommended in these papers seems to offer no advantages over the iron filings used in the present experiment and is less convenient to handle. Possibly the writer used unusually small filings although they were unselected at a machine shop and contained a noticeable amount of emory dust. These light-colored particles, in practice, served to increase the distinctness of the striations.

The data were treated by analysis of variance. Preliminary tests showed that no bias was introduced in any distribution of measures by discarding the incomplete data of the 26 S's who had failed to say one or more of the stipulated vowels. Thus the analyses were made with measures from 16 S's.

RESULTS

In each analysis of variance, F for the experimental variable, i.e., the vowel, was highly significant (Table 1). Subsequently, the *t*-test was applied to determine the reliability of differences in means for the vowels. The results of these tests are presented in Table 2.

In summary, of the 55 comparisons in each analysis more than one-half were significant with respect to measures of frequency and duration, and fewer than one-fourth in the instance of intensity:

	Number of 55 comparisons that was significant	
	t, 1%	*t*, 5%
Frequency	25	4
Duration:		
Level indicator	32	5
Magnetic tape	30	1
Intensity	9	4

The measurements of the frequency of vowels add only three values to results secured by Taylor (5). Taylor's mean frequencies for [i] and [ɪ] were

TABLE 2. Mean values of frequency, duration, and intensity measurements of 11 vowels as spoken by 16 speakers.

	*Frequency in c.p.s.**	*Duration in sec.* Level indicator*	Magnetic tape*	*Relative intensity in db**
[i]	145.7	.252	.159	0.00
[ɪ]	141.7	.251	.135	2.86
[e]	136.5	.286	.191	1.77
[ɛ]	137.6	.265	.153	3.12
[æ]	132.5	.331	.208	3.44
[ɑ]	132.7	.317	.192	3.69
[ɔ]	134.8	.318	.209	3.22
[ʌ]	140.5	.263	.154	2.21
[o]	137.0	.269	.197	3.71
[ʊ]	148.8	.248	.153	2.52
[u]	153.0	.292	.200	2.56

*A difference between two means is significant if it exceeds the following values:

	t, 1%	*t*, 5%
Frequency	7.3	5.5
Duration		
Level recorder	.032	.025
Magnetic tape	.028	.021
Intensity	2.17	1.65

approximately 4 and 6 c.p.s. higher than the ones reported here. These discrepancies were not significant and the frequencies of the other six vowels that he studied were almost identical with the ones reported here. Taylor proposed the *pitch triangle* because the vowels when plotted according to frequency fell into the pattern of the vowel triangle. The addition of the sounds [e] and [ʌ] in the order in which they are customarily plotted in the vowel diagram makes the pitch triangle somewhat irregular, but again the reversals are not significant. The calculated frequencies of male S's appeared high. That this was also true for Taylor's S's led the writer to note Taylor's remarks about the behavior of S's, particularly with respect to coughing, and gave rise to a suspicion that Taylor's men had read in a loud voice. The present results, in agreement with his, were gained from normal conversational reading.

In an earlier oscillographic study (*1*) the writer used [tɑp] as a basis for a wave-to-wave harmonic analysis. The mean frequency for 9 examples of the vowel was 115.5 c.p.s. The differences between the two means, 115.5 *vs.* 132.7 is significant and might arise from dissimilar procedures. In the earlier study S repeated [tɑp] in a rhythm established by practice and in the present instance read the word. Taylor's S's also read the experimental materials. Possibly the frequency in oral reading is higher than in repetitive speaking.

A plot of the mean values of the durations of the vowels suggests an inverted vowel triangle and the possibility of a relationship between duration and frequency. However, when one is plotted against the other, the vowel [ʊ] is sufficiently out of line to make the fitting of a curve to the values meaningless. The two sets of mean values for duration were not the same.

Clearly the measures from the graphic level indicator over-estimated the durations of vowels. If the measures from the magnetic tape can be accepted as criteria, the generalization is possible that the over-estimation of the level indicator was approximately .1 sec. for each vowel. The validity of the measures from the magnetic tape is in part demonstrated by comparison of the durations of [tɑp] in this study with oscillographic recordings of the word in the study mentioned earlier. The mean durations were not significantly different.[2]

It is commonplace to speak of the varying intensities of vowels. Possibly the basis for this is Table VIII in Fletcher's *Speech and Hearing* (*2*). The present analysis revealed few significant differences in this regard. The vowels [i], [e] and [ɑ] were significantly different within a range of 3.7 db. Excluding [i] and [e], the range for the vowels was 1 db. A re-examination of the data summarized by Fletcher shows that the values for power represent a range of 3.8 db—almost identical with the ones quoted here—and makes real differences in intensity among many vowels open to question. Obviously the adequacy of the level recorder used in the present study is also open to question as a device for measuring the intensity of short complex sounds like spoken vowels. Its usefulness for this purpose is being explored further. Meanwhile, two observations are in order with respect to the recorder. First, it differentiated intensity on some basis other than duration. (One of the columns in Fletcher's table when analyzed into front-back vowels yields values that correspond in rank order with the duration values presented above with the exception of the relationship between [u] and [ʊ].) Second, the mean values of intensity from the graphic level recorder covered a range of 3.7 db. There were no significant differences in intensity among the back vowels although significant variations in duration were as numerous among them as among the front vowels.

[2]The over-estimation of the duration of the monosyllable by .1 sec. is not to be construed as a fixed correction. The mean discrepancy was computed for each S and plotted as a function of the mean intensity of the S. The plot suggested a linear regression with amount of error in duration increasing with intensity. A more exact analysis of the error of the level recorder in this regard is in process. Meanwhile measurements of duration with the instrument are being limited to applications that use repeated performances by the same S's or sufficiently large numbers of S's in each condition to make a systematic bias in intensity improbable.

Supplementary Note on the Loudness of Vowels

The foregoing discussion provokes questions about real differences in intensity among vowels, and more importantly about their relative loudness. This note reports an exploratory study related to loudness. Three of the words as spoken by one voice in the foregoing experiment were re-recorded on loops of magnetic tape. The words [tip], [tɪp], [tɑp] represented different relative intensities, 0, 2, and 3.5 db. Six listeners (S's) heard each vowel repetitiously in one ear and white noise of a moderate intensity in the other. The S's had normal pure-tone hearing.

The S's heard the following recorded directions:

> You will hear repetitions of a word through one earphone and continuous noise through the other. With this control you can change the intensity of the word. Please adjust the loudness of the word until you believe it to be equal to the noise. Take as long as you want for each judgment. You will make 110 judgments. We shall rest after you make 60 of them. Do not touch the headset. The first 10 trials are for practice. Take at least a half-minute for each trial.

The order of vowels was counterbalanced among the S's, who heard one vowel on each of three successive days. Within an experimental session

TABLE 3. Analysis of variance based upon voltages of vowels when they were equated in loudness to white noise.

Source of variation	*d.f.*	*Sums of squares*	*Mean square*	*F—ratio*
Subjects (S)	5	4798	959.6	3.56*
Vowels (V)	2	988	494.0	1.84
S x V	10	2691	269.1	
Total	17	8477		

*Significant at 5%

half of the judgments were made with the vowel in the right ear, half in the left ear. Half of the judgments were made by adjusting the intensity of the vowel downward to the level of the noise; half upward. When S signalled *ready*, E read the intensity of the vowel from a Hewlett-Packard vacuum-tube voltmeter in the vowel-earphone circuit.

An analysis of variance was made with the mean voltage for each condition of the experiment used as the basic measure. Main effects in the analysis were subjects, right-left ears, up-down adjustments, and vowels. Ears and directions of adjustment were not significant. Thus the data were reduced to a simple analysis of subjects and vowels (repeated measures). This analysis is summarized in Table 3. The relatively high interaction value makes it probable that the S's did not respond alike in the experiment. This is corroborated in Table 4. Little variability occurred in the readings for each S when matching a single vowel to the noise.

Nothing in the experiment indicated that the vowels differed in loudness. However, the high variability among S's discounted the validity of the technique.

CONCLUSIONS

This study was planned as an application of statistical methods that might establish interrelationships among frequency, duration, and intensity. There were no quantitative conclusions in these regards. Independent analysis of variance, however, established significant differences among some vowels in their natural frequency, duration, and intensity. Second, frequency varied with the openness of the vowel, the more open the lower the frequency. Third, in general, duration varied di-

TABLE 4. Mean relative intensities (db) of vowels. Each measure, mean of 100 judgments.

	[tip]	[tɪp]	[tɑp]	*Mean**
Listener 1	—25.70	—32.55	—27.22	—28.49
2	— 9.62	—15.15	—13.17	—12.65
3	— 3.75	— 3.80	+ 1.08	— 2.16
4	+ 2.48	—25.42	—11.32	—11.42
5	— 5.02	—28.25	— 6.60	—13.29
6	—30.12	—14.90	—16.95	—20.66
Mean*	—11.96	—20.01	—12.36	

**t*, any difference between means of 24.41 significant at 1%; 18.54 significant at 5%.

rectly with the openness of the vowel. Fourth, there were significant differences among the over-all intensity values of vowels. These were fewer than comparable differences in the other aspects of the vowel.

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Revised Concept of Rate

J. C. Kelly
and
M. D. Steer

RATE of speaking is traditionally described as the number of words spoken per minute during a complete speech performance. In calculating over-all rate of speech, the estimate includes intentional pauses and unintentional pauses as well as meaningful words spoken in the elapsed time. In extempore speech the amount of non-speech time may be considerable. Under such conditions it is possible for the speaker to have a slow over-all rate, yet word utterance within the sentences might be rapid for the most part.

Over-all rate is analogous to an estimate of the average speed of an automobile. Assume that an automobile was driven from Town A to Town B, 100 miles away, in three hours. Simple calculation would show that the average speed at which the car was driven was 33 1/3 miles per hour. If we knew that the driver stopped for lunch for one hour on the way, however, and was driving only two hours, the average driving speed would have been 50 miles per hour. If the roads were poor and the driver drove alternately fast and slow, the actual speed of the car might have been 70 miles per hour much of the time. The average speed of the car obviously does not describe the actual speeds at which the car was driven. It makes considerable difference in a traffic court whether the speed at any moment was 33 1/3, 50, or 70 miles per hour.

In the voice science laboratory, likewise, it may make considerable difference whether the person was speaking, at a given time, at a rate of 80 words per minute, 200 words per minute, or 400 words per minute. If two adjacent sentences in extempore speech were uttered, one at a rate of 80 words per minute and the next at a rate of 400 words per minute, the average syllable duration of the first sentence would have been 1/2-second, while the average syllable duration of the second would have been 1/10-second. Other factors being equal, the communicative values of these adjacent sentences would not be identical. Recent investigation has indicated a relationship between syllable duration and speaker intelligibility (*5*).

The title of this article does not imply that a new concept is offered. Jack C. Cotton wrote (*1*):

> Speech rate determinations which are made by timing a speech and calculating the average number of words spoken per minute, although useful for some purposes, are practically worthless in any scientific speech study.

Cotton used the syllable as his unit of rate and concluded that from syllable to syllable speech rate varied from 50 to 450 words per minute. Other experimenters have dealt with

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various aspects of the problem of rate. Franke (*2*) has indicated that the correlation between all-over rate and ratings by judges is very high. On a small sample she also reports the correlation between the all-over rate and judgment to be slightly higher than the phrase rate and judgment. Fairbanks and Hoaglin (*3*) have also indicated a wide range in rate by the phrasal method, the range being 136-320 words per minute. They also indicate a correlation of .81 between the all-over and phrasal rate determinations.

The purpose of this study is to obtain answers to the following questions:

1. Is over-all rate of speech descriptive of the actual sentence rates employed by the speaker?
2. Does a relationship exist between rate within the sentence and syllable duration within the sentence?
3. Does the mean of sentence rates for each speaker correlate more highly with audience judgment of rate than does over-all rate?

It might be stated parenthetically that one is confronted with choosing between words per minute or syllables per minute as a means of describing rate. Although arguments have been expressed on both sides, the correlation obtained between the two expressions of rate in these data is very high, .84. Apparently either estimate would give substantially the same result. Since it is more common and more convenient, rate is expressed in words per minute in this study.

Procedure

The present investigation is an analysis of sentence rates of the extempore speech of college speakers enrolled in an elementary public speaking course. Twenty-four subjects gave a regularly assigned speech which was recorded in the classroom by means of a VRF-3, 35 mm., Plastic Film Recorder. At the time the speeches were given, the members of the class, numbering 23-26, judged the rate of the speakers on a five-point scale ranging from very slow to very fast. Included in the analysis were all the sentences spoken by the subjects in the two-minute speech sample. It was found that these speech samples consisted of 325 sentences, composed of 6,688 words, and having 9,541 syllables.

Measurement of phonated time was made by means of the Purdue Speech Sound Timer (*4*), a device that records accumulated time during which the sounds of speech exceed a set intensity level. This device, employing a voice-activated relay and an electric clock, measures phonated time in 1/100-second units and may be calibrated to include all vowels and voiced consonants and some of the voiceless consonants.

The following determinations were made:

1. *Audience Judgment of Rate.* A single composite rating was assigned to each speaker on the basis of 23-26 raters. A mean rating of five was estimated as very fast and an estimate of one was very slow.
2. *Speech Syllable Duration.* This measurement was the total phonated time of the sentence divided by the number of syllables in the sentence.
3. *Per cent Phonated Time.* The total phonated time in the sentence divided by the total elapsed time of the sentence.
4. *Over-all Rate.* This measurement was the number of words spoken in the total elasped time of the speech converted into words per minute.
5. *Sentence Rate.* The same estimate as over-all rate except that the measurement was made of the sentence. The mean of all sentence rates was the statistic used to describe the rate for each individual.

Results

Considering the questions proposed at the beginning of this discussion, results of the investigation may be expressed as follows:

1. *Is over-all rate of speech descriptive of the actual sentence rate employed by the speaker?* Figures 1 and 2 indicate the variability of rate from

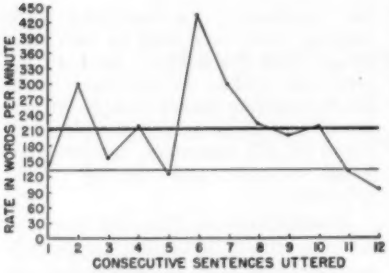

FIGURE 1. Sentence rate profile of Speaker K in extemporaneous speech. The thin line represents mean over-all rate (133 words per minute); the heavy line represents the mean sentence rate (211 words per minute).

sentence to sentence in two of the 24 speeches studied. These two rate profiles are typical of the group. It may be noticed that the thin line on the profile for Speaker K (Figure 1) indicates the over-all rate of speaking, 133 words per minute. Only three of the 12 sentences in this passage were actually spoken this slowly. In 9 of the 12 sentences, the rate of speech exceeded the over-all rate. The range of rates per sentence varied from 95 words per minute in the 12th sentence to 436 words per minute in the 6th. The mean rate of 12 sentences was 211 words per minute.

Speaker J (Figure 2) presents an equally varied pattern, but the pattern is of a different sequence. In contrast to the first speaker whose sentences are alternately slow and fast, Speaker J starts with a rate of 390 words per minute for the first sentence and is progressively slower in the next four. The fifth sentence is spoken at a rate of 136 words per minute. The thin line again indicates the over-all rate in words per minute, 154. Again, all but two of the sentences are spoken at a rate faster than the over-all rate. For the entire group of subjects, 81 per cent of the sentences are spoken at a rate that exceeds the mean over-all rate. It may be argued that a rate determination that describes only a fraction of the sentences spoken is not an adequate determination of rate. The difference between the over-all rate in a speech and sentence rate is due to a non-speech factor; that is, pause time between sentences is time during which no speech occurs and hence is not directly related to the speed of word utterance within the thought units of speech. Although the pause time may be related to the speed with which words are uttered, (the faster the rate the smaller the pause time between rate units) this relationship is not sufficiently high to be included as a part of rate.

Table 1 indicates that the discrepancy between mean sentence rate and over-all rate is substantial. The over-all rate for the 24 subjects was 159.06 words per minute, while the mean of sentence rates was 208.81 words per minute. Since the entire word content of the speeches is contained within the sentences, the actual speed of utterance is probably more accurately described as 208 words per minute than 159. The mean slowest sentence rate for 24 speakers was 125.75 words per minute while the mean fastest rate for the same speakers was 328.42 words per minute. These mean figures indicate a considerable variation in rate for extemporaneous speech.

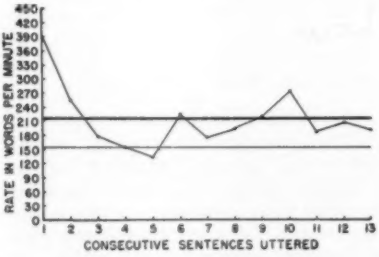

FIGURE 2. Sentence rate profile of Speaker J in extemporaneous speech. The thin line represents mean over-all rate (154 words per minute) and the heavy line represents mean sentence rate (215 words per minute).

TABLE 1. Index of factors of rate in extemporaneous speech.

	Mean	*S.D.*
Mean Syllable Duration	.154	.02
Mean Per Cent Phonation	.706	.10
Mean Per Cent Monosyllables	.696	.05
Mean Over-all Rate	159.06	23.62
Mean Sentence Rate	208.81	30.42
Mean Slowest Sentence	125.75	25.68
Mean Fastest Sentence	328.42	73.13

Table 1 also indicates some other aspects of rate. The mean duration of the syllable in extemporaneous speech was .154 seconds. The mean per cent of phonated time within the sentence was 71 per cent. And the mean per cent of one-syllable words in the text chosen by speakers in this situation was 70 per cent.

2. *Does a relationship exist between rate within a sentence and syllable duration within the sentence?* Table 2 indicates that the relationship between sentence rate and mean syllable duration is expressed in a correlation of -.47. With an N of 325 cases this correlation is significant. An increase in rate accompanies a decrease in syllable duration.

3. *Does the mean of sentence rates for each speaker correlate more highly with audience judgment than the over-all rate estimate?* Table 2 indicates that the correlation between over-all rate and audience judgment is .47 while the relationship between mean sentence rate and audience judgment is .62. In extemporaneous speaking the mean sentence rate agrees more closely with audience judgment than does over-all rate. The audience does not judge variety of rate as an indication of fast or slow rate. If the standard deviation of rates within the speech of an individual is used as an index of rate variation, the correlation between variability in rate and judgment of rate is .22. This correlation is not significant.

CONCLUSIONS

This investigation has considered elements of rate and judgment of rate of the extemporaneous speech of 24 college speakers in a beginning public speaking course. The results must necessarily be confined to extemporaneous speech in a classroom situation and to the particular analysis employed. With these limitations the following conclusions seem warranted:

1. Extemporaneous speech is extremely variable in rate, ranging from 125 to 328 words per minute on the average. Over-all rate fails to reveal this variability. Over-all rate also fails

TABLE 2. Correlations of factors of rate in extemporaneous speech.

	Student Judgment	*Per cent Phonation*	*Syllable Duration*	*Over-all Rate*	*Sentence Rate*
Per cent Phonation	.57				
Syllable Duration	.01	−.37			
Over-all Rate	.47	.48	−.29		
Sentence Rate	.62	.45*	−.47*	.77	
Per Cent One-Syllable	−.04	.23	.77	.13	.25

*N = 325.

to reveal the true talking rate. It appears that the sentence by sentence analysis method would come closer to revealing the true speaking rate as well as the true variability of rate.

2. It is probable that the sentence rate method of describing extemporaneous speech is more highly related to audience judgment than is over-all rate of speaking.

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Voice Recording—Some Findings and Some Problems

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DURING the war years, the use of recording techniques by civilians was either greatly reduced or entirely eliminated. Now that the war is over, this situation has changed very rapidly. Improved equipment and also new types of equipment are becoming available. The direction, and indeed the extent, of these changes cannot now be stated with finality. Some indications of what may be expected are evident in the descriptive material of such apparatus as the Fonda recorder and the new G. E. tape recorder. One radio supply house (*1*) lists in its current catalog no less than nine different recorders, of three different types (disc, wire, and tape), by seven different manufacturers, and at prices ranging from $87.92 to $741.00.

The postwar period has been marked by a return of speech and hearing specialists who, either in the armed forces or working in allied agencies, were making a most significant contribution to the war program. Much of the research which these people carried out and many of the results which came from their work have been and are in the process of being published. But the picture is still fragmentary. Anything that is said today, therefore, must necessarily be based on incomplete data.

From these statements it should be evident that this paper makes no pretense at presenting final dicta. Yet there may be value, even with only the present evidence, in pausing for a moment to try to gain perspective about this matter of voice recording. Enticing advertisements and sales talks are presenting the merits of various types of equipment. Remembering that the prime purpose of that advertising is to sell the particular product being advertised, it behooves practical clinicians to do some independent thinking about types and uses of equipment. Voice recording can then be fit into its proper place in rehabilitory programs, and the standards set and the demands made will influence the type and quality of equipment that is manufactured.

In considering the problem of voice recording a point should be recalled which is so obvious that it may seem scarcely to merit mention. That is the problem of job analysis. Every person who is using voice recording equipment or is going to buy such equipment should make a thorough analysis of the particular situation in which he is working and of the purposes for which he wishes to use this equipment. There are, of course, temptations to proceed in other ways. Precision equipment is currently in vogue. Use of such equipment has become a standard part of the procedures of the

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modern clinic. So the acquisition of equipment becomes an integral part of the setting up and development of a clinical program. Which equipment? Budget considerations often come first. How much money is available, and what can be purchased with that amount of money? The equipment is purchased and put into use, sometimes well and sometimes just put into use. And one usually can gather testimonials as to the great value of the equipment. Yet one may wonder at times just how significant such testimonials are. Is there any clinical practice that could not, given a proper build-up, elicit equally glowing tributes?

Another temptation in choosing and using recorders is that of uncritical imitation. Many clinicians, trained in a thoroughly equipped university research and clinic center, blindly pattern their equipment and therapeutic programs after the parent institution. Here the temptation is to impose procedures rather than to develop and adapt them. Of course, it would be grossly unfair to assume that this practice is limited to the use of recording equipment. A recent college graduate was intrigued by the prospects of teaching modern American poetry in the position he had just accepted because he had just completed a course in that field and had a notebook full of material which he could use to confound his own students. In relation to voice recording it should be recalled that the therapeutic problems of all clinics may not be the same as that at a university which has technicians to maintain apparatus and numbers of graduate students to operate it.

These comments in no sense imply that the therapist cannot learn a great deal about recording equipment and its use from the practices of others. All that is being advocated is that, since situations differ, an analysis of the individual characteristics of a particular situation should be the basis of decisions both as to types of equipment that should be purchased and also as to uses which should be made of such equipment.

In making the job analysis of his particular situation, each correctionist might do well to consider the possible uses of voice recording. All uses will not apply in all situations, but those can be selected and adapted which fit a particular need. A few uses that have been suggested will be discussed for the purpose of showing some of the types of problems involved.

One of the most commonly discussed purposes of voice recordings is to show the patient his problems, to help him 'hear himself as others hear him,' as it is often stated. Few will deny that hearing a recording can help in this process, but there is real danger of over-simplification. Because of both physical and psychological factors, a person does not usually hear his voice, at least some phases of his voice, in the same way that others hear it. It does not follow that, once a recording is made of his voice, the person will automatically develop insight and will hear himself as others hear him. In the first place, all persons listening to a voice do not hear it in the same way. There is a subjective factor involved in hearing as done by all people, both those who speak and those who are spoken to. To illustrate: As a part of a study of agreement of people's judgment of voice characteristics (*5*), four trained teachers of speech listened to 50 students and judged them, among other things, on the pitch, rate, and loudness of voice. The categories of judgment were very broad. For pitch, for example, the divisions were into high, medium and low. Yet even with only these three broad categories, the judgments were far from agreement. In only 20% of the cases did all four instructors make the same judgment of pitch. Tuthill's study (*11*) of agreement of judgment as to when a person stutters makes the same point in a

most dramatic way. Sixteen persons listened to records of 'stuttering' speech and labeled 172 examples of stuttering. Yet in only eight of the 172 instances labeled as stuttering did all 16 listeners agree that that particular phenomenon was an example of stuttering. The same point, applied to a broader consideration of speech, is made in the interesting study of Dewey's Minneapolis speech of October 24, 1944, reported by Thompson (*10*). As Thompson says in a footnote which refers to the reactions of the people listening to the speech, 'Differences of opinion on some points, however, were sharp.' This point has been made so many times and in so many ways that it should not require any special emphasis.

There is no guarantee, furthermore, that a subject who hears a recording of his voice will automatically agree with another person's judgment of characteristics of his voice. As a matter of fact, merely hearing a recording of his voice may cause a patient to move away from a previous agreement with the judgment of his clinician. In the study quoted above (*5*), it was found, for example, that 20% of a group of 189 students actually agreed less with their advisor's rating of the pitch of their voice after hearing a recording than they did before hearing the recording.

Another use of voice recordings is that of a stimulus or basic motivation to work on problems revealed to the patient by the recording. Here again, recording alone is not all-sufficient. In one group, a most unintelligible speaker had his voice recorded. Upon hearing the recording, he responded that his speech sounded just like everyone else's and that he saw no reason for working on it. Whatever motivation results will depend in large part on the technique used by the clinician.

Still another purpose of recordings is that of a measure of progress. This, too, may be a most significant use. But again the question arises: How may this be done most significantly? How much confidence may one have in the practice of cutting one side of a record at the beginning of a period of work and the other side at the end of the period, especially if this method is used as an absolute criterion of progress? Possibly speech rehabilitation is most permanent when it is based on a constantly increasing individual insight, particularly auditory insight. This seems to be most effective when it is built around specific phases of voice rather than general goals. For such work a number of short recordings which are made quite frequently may work best. This must be planned in relation to the amount of time that can be devoted to working with recordings.

A further use of recordings is as an instructional technique. Used for this purpose, recordings should be considered in connection with other possible techniques. There appears to be a great lack of reports of controlled studies exploring this area. Nystrom (*9*) raised significant questions on this point, but many of the questions still seem to be unanswered. How can voice recording best be integrated with the whole process of speech retraining? For which objectives are voice recordings best adapted, and which do they serve less efficiently? Williamson (*12*) offered general suggestions on this point, but an adequate follow-up of his general opinion seems not to have been carried out. With more specific findings available, voice recording might be fitted into the purposes of specialized clinical programs with better results.

What does a recording do that working with the live voice will not do? (1) The recording process provides a *repeatable* stimulus. Inherent in this repeatability is the additional circumstance that the stimulus may be repeated without modification or with

controlled modification (intensity, frequency, rate). In this sense, therefore, the recording process may be a distinct advantage in analysis. But the analysis must still be made.

(2) The recording process provides a *preservable* stimulus. The essential advantage here over the live voice, other than that of convenience, is simply that of comparison. That is, speech produced at different periods of time, or using different vocal techniques, may be compared. But note again that the comparisons must still be made.

(3) The recording process provides a stimulus *independent* of the subject. That is, it provides a stimulus to which the subject can listen without the effort of simultaneous production. But this is not to say that the recording process assures objective analysis by the subject. Consider the case of the writer rather than that of the speaker. It is possibly easier for him to analyze a passage after it has been typed than while he is typing it. But the mere fact that his work is now on a printed page in black letters that look the same to him as to his critic does not assure an objective attitude on the part of the writer.

Three of the essential advantages in the recording process have been noted. But it must be stressed that, so far as the patient is concerned, none of these advantages opens up any basically new approaches. The recorder simply makes it possible for him to hear himself less perfectly than he has been able to hear other people for years. The aphorism that recording enables the subject to hear himself as others hear him may be technically feasible. It is also superficial. A more significant restatement may be: 'Recording enables a subject to hear himself with the same lack of critical judgment with which he hears others.'

In this restatement rests, perhaps, the explanation of the point put succinctly by Anderson (*2*), who bluntly states: 'There is no magical benefit to be derived from the mere recording and playing back of the student's voice.'

When the clinic director is making a job analysis of his situation, he will run into another problem, the choice of equipment. Many changes and much improvement should result from the accelerated activities of the war years and the investigations which they stimulated. Thus it would be particularly presumptuous at this time to say what equipment anyone should buy. Only a few fundamental criteria which the authors believe have a general application will be suggested.

(1) *Fidelity:* The stage is passing when recording equipment is a novelty which must be selected on word-of-mouth testimony. But unfortunately the stage is just beginning when it may be possible to purchase equipment on the basis of authentic performance data. Several factors have held back this period. In the first place, there has not been complete agreement as to what frequency response is essential for adequate reproduction of speech. For example, Hudgins (*6*), writing from the standpoint of testing ability to hear recorded speech, suggests that the pick-up, amplifier, and speaker be flat from 100 to 4000 c.p.s.

Kantner and West (*7*) state that the essential speech frequencies range from 100 to 8000 c.p.s. Kopp (*8*), on the other hand, found that certain speech sounds, such as the continuant fricatives, have frequencies up to 15,000 c.p.s., the upper limit of this apparatus. For clinicians, therefore, concepts of the frequency response necessary for good speech reproduction have tended to vary with authorities and with purposes.

In the second place, the frequency response of commercially available recorders and playbacks has been undergoing constant flux. The upper limit of such equipment is being pushed consistently higher. But 'high fidelity' is still expensive. In the line

of one manufacturer, for example, a recorder with a cutting head cut-off of 5000 c.p.s. is priced at $348.00; in the same line, a recorder with a cutting head cut-off of 10,000 c.p.s. is $741.00. Moreover, the price of high grade accessories, particularly microphones and speakers, is also very high.

In the third place, it should be pointed out that even now many manufacturers do not provide frequency response curves, particularly for loudspeakers, because of the fact that such curves are, at present, not directly comparable. As was pointed out by Angevine and Anderson (*3*):

> The average purchaser of loudspeakers is not an engineer and, naturally, is not familiar with many technicalities of acoustical measurements as they are made in the laboratory of the speaker manufacturer and recorder as 'response curves.' Measurements of the frequency characteristics of an amplifier or an electrical network are comparatively simple and can be specified in a manner that is universally acceptable. In other words, a frequency response measurement of an amplifier, tested in New York, will look the same as the same amplifier tested in San Francisco. Unfortunately there is no such happy solution for loudspeaker measurements as there are large variations is observed performance due to different methods of measurement and the differences in the acoustics of the surrounding space. Therefore it is difficult for the user to evaluate frequency characteristics from a response curve unless he is thoroughly familiar with the methods used to obtain it.

True high fidelity in sound reproduction, moreover, involves more than a mere consideration of the frequency range of the instrument under consideration. Too often, in actual practice, the acoustic effects of wide range reproduction have been marred by high distortion and noise levels. As the following definition by an audio engineer (*4*) makes clear, commercially feasible 'high fidelity' today represents at best a compromise among many factors:

> It is suggested that an ideal definition might be that high-fidelity program material is that which cannot be told from the original. A useful working definition must be commercially realizable and thus may be something less than absolute perfection. This working definition can be expected to change as the art progresses, but, for purposes of discussion, a very good 1947 definition might be described as follows: With microphone to horn gain about zero (acoustically), the transient and steady-state frequency responses should be within 5 db of each other, and neither curve should depart more than 10 db from the 1,000-cps transmission over the range from 80 to 8,000 cps. Over this same region the over-all reverberation time should not vary by a factor larger than three. Background noise in the absence of program material should be 50 db below maximum desired level; noise in the presence of program material may rise to 30 db below program material on loud passages without being objectionable. At maximum level, the 60/1,000 cps intermodulation distortion may reach 30%, *provided* the fifth-harmonic distortion (400/2,000 cps) does not exceed 0.3 per cent. At all output levels more that 10 db below maximum the intermodulation distortion should be below 10 per cent and the fifth-harmonic distortion below 0.1 per cent.

To those people who object that the above definition constitutes only medium fidelity, Hawkins is careful to point out that 'probably fewer than 100 homes in the world have anything any better, no advertised radio receivers can possibly equal it, and few broadcast monitors even approach it.'

(*2*) *Cost:* Cost includes original cost, upkeep, and operating expenses. As with anything else one buys, cost is relative to what you get and what you wish to do with what you get. Certainly, if the equipment is to be used for the analysis of voice quality, any equipment that does not provide adequate fidelity costs too much. On the other hand, if the equipment is to be used for the analysis of such factors as rate, pause, pitch, inflection, etc., it is equally unwise to purchase a thousand dollar machine when a hundred dollar machine will do the job as well. And since cost includes not only original cost but also upkeep, better

equipment may prove to be less expensive than equipment which, because of its original cost, seems to involve a saving. The cost of operating, beyond simple upkeep, may be a real problem, too, especially if the apparatus is to be used with large numbers of subjects. Records, files for records or spools, and the like can involve considerable expense. All these items, considered from a long-range point of view, should be evaluated in terms of getting the maximum value out of the funds available.

(3) *Durability:* Some apparatus is excellent for high-fidelity results but requires an expert to operate it and a qualified technician to keep it working properly. Other recording equipment, notably some of the magnetic recording equipment, is relatively simple to operate and is quite dependable. For many programs it would seem desirable to have some equipment which can be used without the continued supervision of an expert. If not, the amount of time during which the apparatus can be used will of necessity be limited or the number of subjects who can use the equipment will have to be limited. For example, most speech correctionists would probably agree that many speech cases may receive real benefit from coming in at frequent intervals to make recordings which they can play back and listen to for the motivation and insight which may result. If the student is to have the advantage of such experiences, the recording equipment will probably be used frequently by many people who are not trained as technicians. Even assuming that all students are careful, this will place greater strain on the equipment than if a technician were always in charge. For any situation the teacher should consider what types of equipment will result in maximum use, not in limitless time but within the limits of practical time possibilities, especially in terms of the time required not only to supervise the student but also to supervise the use of equipment.

(4) *Flexibility:* This will not be much of a problem where one and only one piece of apparatus is to be purchased. Where there is any possibility that later additions will be made, the clinic director should consider how what is being purchased now will fit in with what may be secured later, always in terms of maximum value for his particular program.

A reading of the material on voice recording from a variety of sources seems to indicate two outstanding things. One is the large amount of significant and careful study that has been made of recording devices and their characteristics in such organizations as the Bell Telephone Laboratories. The other is the comparatively small amount of controlled experimentation by speech and hearing therapists, on what the recording apparatus can do, how it can be used best and with what results. If this is a true picture, therapists seem to have been more inclined to generalize and to gather testimonials than to experiment. Possibly this picture will change greatly. The best and most valuable use of voice recordings can be made only with a thorough job analysis of the needs of the situation and a ruthless scrutiny and careful analysis of as many as possible of the immediate problems related to voice recordings.

Some time ago the director of a large speech clinic said, 'I believe the day has passed when we need to quote studies on the value of voice recording for speech correction.' That attitude seems to avoid the real issue and to retard progress. One might as well cease all work on nutrition, for who can deny the value of food to the human body? Voice recording is here as a legitimate and valuable part of speech correction. The question is not one of blind acceptance but of analysis for maximum use.

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The Role of Surveys and Diagnostic Clinics in a State Program of Speech Correction

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In any discussion of the field of speech correction, the existence of one important factor must be recognized—that, as a comparatively new profession, its members are obligated not only to provide its services but also to extend its facilities. There are many possible methods of public education which are practicable and ethically acceptable. But, in any case, the best approach would seem to be one in which the service rendered is, in itself, an advertisement of the nature and scope of the professional work. The survey and diagnostic clinic seem to fulfill such a requirement.

A re-examination of three years of work in attempting to establish speech correction throughout the state of Virginia has revealed that the conducting of surveys and diagnostic clinics was one of the best—if not *the* best—of the many methods used in the organization of the program. For maximum effectiveness, however, the potentialities of these media must be fully utilized and a systematic procedure must be carefully followed.

The purpose of this article is to indicate and discuss the reasons for conducting field work and to cite some of the specific techniques and methods which must be used to obtain optimum results.

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The Basic Purposes of Surveys and Diagnostic Clinics

The survey or diagnostic clinic may be utilized not only by college clinic personnel but by correctionists employed in state or local public school positions as well. In any case, the specialist must consider the three possible objectives of the project: to render a public service, to serve as a medium of professional research, and to educate the public in regard to the services of speech correction.

Clinics and Surveys as a Public Service: Any survey or diagnostic clinic should render certain immediate and long-range services to the locality in which it is conducted, the first of which is a description and diagnosis of the speech defects. One frequently encounters the comment from a teacher or parent, 'I know there is something wrong with the child's speech, but I don't know what it is.' If the speech therapist can provide a diagnosis and a simple description of the nature and significance of the problem, much of the fear and apprehension which surrounds the existence of an unfamiliar disorder may be dispelled. It is frequently possible, moreover, to illustrate the fact that many speech disorders which seem to be different from one another are, in reality, only different degrees or forms of the same type of defect.

Valuable as the recognition of the speech defect itself may be, it is almost equally important that the speech specialist observe other suspicious factors which might justify referrals.

The need for medical attention, dental treatment, or psychological testing often goes unrecognized. By suggesting the utility of such referrals and, at the same time, performing a specialized service, the speech correctionist may focus attention upon the need for a wider application of the services of special education.

But the correctionist must go beyond recognition and description of speech and allied problems. A survey or diagnostic clinic becomes an increasingly valuable public service to the extent that it is possible to provide counsel for teachers and parents. They want to know what to do and what not to do to aid the defective child. Despite the fact that the more complex disorders must be treated clinically, every therapist is well aware of the many ways that the services of parents and teachers may be employed either as a substitute for or as a supplement to clinical attention. This function seems to be served best in direct proportion to the extent to which teachers and parents may be brought in to observe and participate in the clinical procedure.

One of the more difficult phases of public service which may be fulfilled by a survey or diagnostic clinic is the provision for follow-up of the cases studied. As a general rule, great interest is exhibited in the work of the speech therapist at the time of his first visit. This initial interest, however, which was induced perhaps partly by the novelty of the procedure, dwindles rapidly if further help is not available. To some extent the interest may be maintained by providing a careful and complete written report of the results of the examinations. Obviously, clinical attention should be provided, if possible, for the cases in need of it. The services to the speech-handicapped of any locality, once begun, should be continued as long as the need and desire for them exists.

Clinics and Surveys as Fact-finding Methods: The speech correctionist and his profession, as well as the general public, should derive some benefit from the effort involved in conducting a public school survey or diagnostic clinic. The primary professional gain obtained lies in the discovery of additional facts regarding speech disorders. Through the survey method, particularly, the incidence of the various types of speech disorders present in a given school population may be learned. It should be noted that, although the incidence of the various *general* classifications of disorders may exhibit relatively small variations according to the locality, some differences may be observed from school to school and from one locality to another in terms of the deviations within the general classifications. The constant growth of the profession requires a continuing publication of the facts obtained by many observers. The familiarity with the facts and figures of the local speech situation likewise provides a firm ground for recommendations and the development of a plan of therapy.

It is also interesting and valuable to know the general attitude and the extent of knowledge about speech defects which exists in any given locality. Such information may be obtained not only through the personal interviews conducted at the time of the survey, but also through the medium of the preliminary correspondence and questionnaires preceding the project. Needless to say, such facts must be known in order to promote a local or state program successfully.

Clinics and Surveys as Public Education: Any diagnostic clinic or survey must be considered for its value as a means of acquainting the public with the nature of its services. In fact, where a new program is being developed, this may well be its most important function. The assumption here is that the demonstration of the functions of the clinician is more valuable than thousands of words of mere description of what can be done. Such

a project must be handled carefully, however, for optimum effectiveness in this respect. A poorly conducted clinic or an obvious lack of interest in following up the cases discovered will not invite the continued interest of the observers.

The correctionist must undertake to generate good will from the very first. The pre-survey publicity and correspondence must be given especially careful attention. If possible, a survey should be made only after it has been requested by one or more local officials. The earliest contacts, therefore, must be conducted in such a way that a request for help will be forthcoming.

Successful extension of speech rehabilitation depends upon accurate long-range planning, an important aspect of which is a study to determine which areas of the state appear to be the most likely to adopt speech correction programs of their own. If a given area fits such a criterion, then the preliminary preparations for a survey or diagnostic clinic may be considered. From the standpoint of public education perhaps the two most important functions of the preliminary planning are (1) to insure sufficiently adequate facilities and skillful scheduling of examinations in order to avoid long, aggravating periods of waiting on the part of the cases, and (2) to notify all individuals who have — or should have — an interest in what is being done: parents, teachers, school administrators, physicians, and the personnel of local health and welfare departments.

Despite the fact that the presence of parents, teachers, and other observers is virtually certain to retard the speed of the examination process in a diagnostic clinic, the strategic advantages obtained by permitting observation adequately compensates for the time lost. Even during the screening period of a complete survey, teachers should not be discouraged from attendance. When a relatively detailed study of a speech problem is being made during a diagnostic clinic, parents and teachers may contribute information which could not have been obtained otherwise. After a diagnosis has been made, moreover, some of the most significant and lasting results are derived from frank and objective conferences with the people concerned. The fact that a seemingly busy specialist is willing to take time out to talk to the interested person is almost always a favorable item in the enlistment of support for a speech program.

Since the layman judges any educational effort in terms of specific findings and recommendations, no diagnostic clinic or survey can be deemed completed until all results have been summarized and the findings have been placed in the hands of those in a position to do something about them. It should be emphasized that merely to send one copy of the findings to the school superintendent is usually not enough. Duplicate copies and abstracts of the results should be distributed to as many teachers, parents, administrators, and others as participated in the project in any significant way. It is also suggested, subject to local modifications, that a report of the survey, together with the findings, be made available to the local press.

The correctionist must remember that even detailed and accurate summaries and reports may be confusing to the reader. As a portion of the necessary continuation of an effort in a particular locality, therefore, conferences should be arranged to assist the local personnel in the interpretation of the findings and to plot future action.

It is important that the speech correctionist show how the speech program ties in with other aspects of existing or proposed educational facilities. While it is not desirable for a local school division to be entirely dependent upon a near-by college clinic for help in speech correction, it

must be recalled that many public school systems are financially unable to give immediate support to a speech program. The correctionist's attitude should be, 'We are willing to assist you in any way as long as our help is needed and desired and you do not have the facilities and resources to continue on your own initiative.' Every effort should be made, however, to ascertain that the local school or school division is moving toward independence rather than complete dependence on outside help. The speech correctionist should be prepared to submit a practical long-range plan which would include a step by step advance toward the desired objective.

Methods For Achieving Purposes of Surveys and Clinics

Although a thorough awareness of the purposes of the field project is a valuable asset to the speech correctionist who attempts it, complete success cannot be attained unless the details of the work are carefully planned. Some procedures have been suggested above. The recommendations which follow represent an attempt to record concisely the most important details involved in directing a survey or diagnostic clinic.

Pre-Project Procedure: As previously mentioned, much of the success of any field project depends upon the ground-breaking work which precedes it. Specific suggestions should be noted in regard to three possible preliminary considerations:

A. Questionnaires. The initial announcement of the existence of speech correction facilities may be made by using a questionnaire in which the following information may be sought: size and personnel of the school system, existing facilities for special education, date and nature of any previous surveys with the results obtained, time and personnel allocated to speech in the general curriculum, estimate of need for and interest in speech therapy and other services which might be provided by a speech specialist, interest in a survey or other special help, and courses for the teachers. The questionnaire should be accompanied by a covering letter indicating its purpose and inviting requests for services.

B. Forms and Cards. Because the individual contacted to make the local arrangements is frequently inexperienced in such work, it is necessary to provide detailed forms and instructions.

In surveys, and especially in diagnostic clinics, it is advisable to send the forms to be used for the speech history and analysis in advance. The four by six or five by eight inch cards seem to be the most satisfactory. They should contain spaces in which to record general information such as name, address, age, grade, etc., school progress and adjustment, medical history, and analysis and classification of the speech disorder. To facilitate the examination procedure they should be sent to the schools at least a week prior to the clinic or survey with a request to the teachers and supervisors to fill in the general information and any available data on school progress and the medical history.

A form letter to be sent to the parents of children to be examined is also useful for the person in charge of arrangements. Such a letter should include a statement of the purpose of the clinic, a request for parental permission for the child to attend, and an invitation to the parents themselves to accompany the child. (Such a letter is intended for use with diagnostic clinics rather than surveys.)

Form letters for distribution to the teachers, also are helpful. These letters should explain the purpose of the procedure and invite the teachers to participate. To assist classroom teachers in their selection of children to be examined at a diagnostic clinic a 'Speech Check Sheet' may be in-

cluded. This consists of a list of simple and easily understandable questions, a negative answer to one or more of which may indicate the presence of some speech or hearing defect.

For diagnostic clinics a supply of appointment cards is also worthwhile, especially if the appointment cards are accompanied by a form which indicates the exact number of examinations to be scheduled for each half-hour or quarter-hour period during each day of the clinic.

C. Arranging for Time and Space. To conduct a relatively thorough examination of each case, including audiometric study and conferences with parents and teachers, the experience of the University of Virginia staff has been that two or three examinations per staff member per hour is a satisfactory rate for a diagnostic clinic. (For screening in a survey, approximately two minutes per child is adequate.)

The nature of the working space is an important factor in the successful management of the project. For a diagnostic clinic the following would be considered the minimum essentials: a room or hallway to serve for registration and waiting room, one large room or two or three smaller rooms for the speech examinations, and a separate room in a quiet place for audiometric tests. It is preferable that the space be obtained in adjoining rooms. The need for a water supply and electric outlets should be clearly indicated. The size of the staff, obviously, determines the amount of space needed. Diagrams of the space requirements, including the number and location of tables, chairs, etc., should be provided in advance of the clinic.

Conducting the Survey or Clinic: If the advance arrangements have been carefully handled, the problem of conducting the project itself will have been materially simplified. The management of a survey or diagnostic clinic, however, requires careful organization and attention to details.

The following suggestions for conducting a *survey* may be briefly enumerated:

1. Limit the survey to a number which can be adequately handled by the staff available. For example, decide in advance how many grades are to be surveyed, but tabulate the results according to age and/or grade to facilitate comparison with the results of other similar surveys.

2. Screen all children for speech problems, allowing an average of approximately two minutes per interview. An adequate supply of testing materials for each staff member is one of the best means of promoting efficiency and accuracy.

3. Insofar as possible avoid interference with previously scheduled classroom activities to prevent antagonism toward the project.

4. Set up a system of classification which will permit tabulation of the severity as well as the type of the problems discovered. An advance staff conference should be held to discuss these criteria, and each staff member should be provided with copies of the standards for judging. During the early stages of the survey the staff should be checked for consistency by sending occasional cases to two or more staff members independently to make certain that judgments on each case are similar.

5. A provision should be made for a complete recheck, following a diagnostic clinic procedure, of the more severe cases.

6. A follow-up of the survey should be provided, including: (a) talk to teachers, parents, and administrators on the significance of the findings and what may be done to correct the disorders, (b) see that all recommendations are followed, (c) offer, if possible, special training for the teachers—extension courses, or the opportunity for futher study at a university, (d) provide sources of materials and methods for teachers, parents, and physicians, and (e) if strategically feasible, discuss the need for a speech specialist to continue the work demonstrated by the survey.

For conducting a *diagnostic clinic*

the following suggestions may be found useful:

1. Use an 'assembly line' system of organization. That is, assign one clinician to each of the several steps in an examination and send each case from one examiner to another.

2. Complete the basic preliminary examinations of each case before admitting parents and teachers for consultation.

3. Assume that this may be the *only* speech examination each case will receive, and place the emphasis upon thoroughness and accuracy rather than speed.

4. Exercise extreme care and acceptable professional techniques on the physical examinations, and recommend referrals on all difficult or questionable problems.

5. Have printed suggestion sheets, materials, and bibliographies available for distribution.

6. Follow the suggestions for testing materials and follow-up procedure enumerated under *survey* above.

Summary

Field work is an arduous and time-consuming procedure and is particularly difficult if undertaken as an extra-curricular activity. Yet those who have attempted it would probably testify almost unanimously that its results justify the expenditure of time and effort. It has been found to be particularly valuable in the early stages of the development of a new program of speech correction, such as in the case of the state of Virginia. The survey and diagnostic clinic procedures are sufficiently flexible to be employed not only by university staffs, but by correctionists in public school and state programs as well. Such projects must be done with a clear understanding of their purposes from the outset, however, and each step must be carefully planned and executed to achieve optimum success.

The continued and increased use of such ventures may be justifiably encouraged, especially in those areas where there have previously been no speech correction services available.

Otolaryngological Experiences in a Hearing Survey

Arnold A. Grossman

and

Richard E. Marcus

A HEARING conservation and rehabilitation program recently concluded in Will County, Illinois, was productive of the otolaryngological and audiological statistics which are here recorded.

In a previous article (*2*), Kincaid and Grossman reviewed the administrative and especially the public health features relating to the Will County Hearing Project. This report is focused chiefly on the otolaryngological aspect of the program.

PROCEDURE

The Will County Hearing Program began November 3, 1947. The hearing of all school children between the ages of six and 19 was tested during the next seven months. After June 1, 1948, the program was left in the hands of local hearing resources. The central co-ordinating figure now became the county health officer. For a time, the county health officer had worked with the authors, who served as program otologists. For the last few months of the program, however, he had functioned in the capacity of director, with the authors acting solely as his consultants.

The County Health Department, from the beginning, served as the central headquarters for the project. All original records on each child remain permanently in this office. The secretary provided abstracts on each indicated case for the local treating otologist. This abstract included the audiometric findings, the program otologist's report regarding the physical findings and his recommendations for medical and surgical treatment, as well as his suggestions for any indicated immediate educational changes. It was made clear to the local otologists when the program first started, however, that they were not committed to carry out the recommendations if they held a different opinion on the cases after examining the child referred to them for treatment by the program otologist. The abstract merely served them as a guide for hearing treatment. The treating otologist reported his findings and therapeutic measures back to the County Health Department and his report was attached to the permanent record which was maintained in the County Health Department for every child in the school system.

Five per cent of all children examined at the otological clinics required free medical, surgical, or free hearing-aid care. This was provided

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TABLE 1. Clinical data on children in Will County Hearing Survey (N=20,663).

Total number of school children		20,663
Present for audiometric examination		20,273
Absent from audiometric examination		390
Otological examination recommended (30 db loss, any frequency)		1,646
Examined by program otologists		1,471
Referred to local otologist	1,069	
Referred to family physician	191	
Treated for cerumen by program otologists	129	
Clinically normal	82	
Consulted family physician or local otologist rather than program otologists		127
Declined further examination		48

through the facilities of the Division of Services for Crippled Children, University of Illinois, as well as through the local otologist, the Illinois Eye and Ear Infirmary, the University of Illinois Hospitals, the Chicago Hearing Society, and through such groups as the local Red Cross and Kiwanis. All institutions providing otological examinations filed reports with the County Health Department.

The records of all children with normal hearing, as well as those relating to the absentees, both from pure-tone screen testing or from otological clinics, were also kept under separate files at the County Health Department. During the last weeks of the original program, 581 of the 971 absentees were sought out and examined.

Between November 3, 1947 and May 28, 1948, two technicians, using group pure-tone as well as individual pure-tone equipment, examined 20,663 pupils in 188 separate schools. All children whose audiograms revealed a 30 decibel loss or more in either ear and at any frequency, were referred for examination to the program otologists at designated clinics. In the days immediately following audiometry, the parents of each child designated for otological clinics were interviewed by the school or county nurse. A case history was completed by the nurse on this home visit. This included not only medically significant facts but also certain essential sociological information.

The program secretary was present along with a school nurse at each program otological clinic. The secretary took notes during the physical examination as the otologist dictated his findings. This economized on the time of the otologist and made it possible for him to examine all indicated cases in less than the full school term. The nurse also served extra-clinically, making home visits with parents and providing liaison with school principals and local physicians.

RESULTS

In the seven-month period, 20,663 children were notified to appear for audiometric examination. There were 971 absentees during the initial screening. That is, only 4.7 per cent of all children scheduled for audiometry were absent when the technicians first visited their schools. Five hundred eighty-one of the 971 were finally tested in the last two weeks of the program. Thus, only 390 absentees, or 1.8 per cent, were finally recorded (Table 1).

Sixteen hundred and forty-six (7.9%) children required otological

investigation by the program otologists. These were referred on the basis of a 30 decibel loss in either ear and at any frequency between 128 and 8,192 cycles per second. Boys far outnumbered girls among the group thus referred. This feature bears more study from an etiological standpoint.

Eighty-two of the referred children were found to be normal after examination at the otological clinic (Table 1). Thus, a net total of 1,564 or 7.5 per cent of the children required further treatment from local otologists and general physicians or from otological facilities in near-by Chicago, where the resources of the Illinois Eye and Ear Infirmary and the Speech and Hearing Division of the Department of Otolaryngology, College of Medicine, University of Illinois, were available for such care.

It is interesting to note that only 0.4 per cent of the above 1,646 children referred by their audiometric display turned out to be normal on clinical examination by the otologists at the clinic and did not require further treatment. This figure could easily be accounted for on the basis of occasional environmental noise, mechanical disorders relating to the audiometer, patient inattention (a rare feature), and the human element of error: patient misunderstanding the exact nature of the test procedure, emotional factors, mental deficiency, etc.

A total of 77 otological clinics were held where the program otologists examined 1,471 of the above 1,646 children in the presence of their parents and at no financial expense to the family. These clinics were held in various schools throughout the county. Children from outlying schools requiring otological examination were referred to one of the larger school areas nearby, where the mobile otological clinic was usually set up. An average of 19 children were examined at each clinic. The smallest number seen in any one day was seven, the largest, 33. It is felt that the optimum number should be 15 patients examined between 10 to 12 in the morning and 15 from one to three in the afternoon, on any one clinic day. This would allow for the completion of the clinic before school ends for the day. Three clinics a week would be ideal, wherein 90 children a week could be studied otologically.

One hundred and twenty-seven families preferred to go directly to their own family physician or private otologist (Table 1). That is, out of 1,646 children referred to the program otologists for investigation, roughly seven per cent did not come. It should be mentioned here that, after the local otologists had become acquainted with all aspects of the program, the parents were encouraged to see their local otologist directly. This advice was offered by the visiting nurse after it was determined that the audiometric findings were consistently accurate.

The Speech and Hearing Division of the Illinois Eye and Ear Infirmary served as an essential accessory to the Will County project. It was to this hearing center that hard-of-hearing children were referred for further investigation regarding their incapacitating hearing loss. Here, too, facilities were available for fitting of hearing aids and for training in speech reading and speech correction. Complete psychosocial care in its relationship to the problems of the deaf and hard-of-hearing was also available. In two instances, young children were referred for further diagnostic study to confirm a tentative impression of psychogenic hearing loss of a situational type. One child seemed to be enjoying the sympathetic attention focused upon her by the school principal and teachers. The other seemed to have developed some poor hearing habits from a hard-of-hearing mother.

One of the authors served as otological consultant to this hearing center. This arrangement co-ordinated the otological and audiological re-

sources at the hearing center with those at the Will County area.

Medical Findings and Recommendations

Generally speaking, the medical recommendations were divided into two main groups. One consisted of referrals to the family physician, the family dentist, or both; the other group consisted of those children referred to the local otologist.

Group One. In Group One are listed such conditions as allergy, the common cold, and dental care. Allergy seemed to be indicated as the possible underlying cause for the hearing loss of 12 per cent of the children referred to the clinics. Three patients presented previously undiagnosed nasal polyps in the middle meatuses. In others, the watery nasal discharge and the patchy pallor of the nasal mucosa were suggestive. In still others, the mulberry-like, facetted appearance of the posterior tip of one or both inferior turbinates offered a clue. Finally, the personal history obtained during the home visit of the nurse often exposed the diagnosis.

Frequently, allergy seemed to be associated with an abundance of adenoid tissue and with concomitant large tonsils. Rapid regrowth of nasopharyngeal lymphoid tissue following adenoidectomy, moreover, was relatively common in this group. The program otologists, in their attempt to evaluate scientifically this phenomenon, established a controlled study of the problem. In a number of such cases, adenoidectomy and radium therapy were routinely ordered along with allergic studies and anti-allergic treatment when indicated. In another group, adenoidectomy and allergic studies and treatment were initiated, sans radium. In a third group adenoidectomy and radium therapy alone (i.e., sans anti-allergy measures), were attempted in order to determine what part allergy plays in stimulating adenoid regrowth after removal, as well as to determine whether radium therapy to the nasopharynx post-operatively would be of value in inhibiting re-growth in spite of an allergic background. This study will not be completed for another few years, when it is hoped the groups designated above will be re-examined and re-evaluated.

With regard to the high tone loss frequently found in children with allergy who usually display Eustachian tube interference by enlarged adenoids, it is here suggested that the cause for this tone loss lies chiefly in the fact that a chain reaction is set up as a result of the allergic background. In allergic children there is usually general lymphoid hyperplasia, especially of the tonsils and adenoids. The resulting Eustachian tube blockage leads to a subclinical otitis media and salpingitis and is thought to involve the Organs of Corti, located in the basal turn of the cochlea. The pathogenesis of the high tone hearing loss is explained on this basis (*1*). If this be true, it could be surmised that an allergic edema of the tubal mucosa would also produce the same effect by the same chain reaction, causing an obstruction to tubal ventilation and drainage from within the Eustachian tube itself. Gerloch's tonsil especially could become a serious offender in this connection.

Large lymphoid elements in the nasopharynx occur, too, in the presence of infection. Thus, children with sinusitis and post-nasal discharge, or those with chronic dental caries, often will also have enlarged adenoids, or a rapid re-growth of adenoid tissue after removal; in this manner, a high tone loss is indirectly produced as in the previously described allergic child. In this instance, the treatment would center in overcoming the foci of infection and in relieving the tubal obstruction by adenoid surgery or by radiation therapy or both.

One must bear in mind that an audiogram informs the otologist only about a part, albeit an important one,

of the story, since it offers the early clue for investigating high tone hearing loss. The term, hearing loss, is not practically descriptive, since the speech frequencies rarely are involved early in the process. The study of each case individually, taking into account the audiometric findings, history, and physical examination, serves to determine the etiology and pathogenesis of the hearing loss, and, in turn, indicates the most effective treatment.

Group Two. Under Group Two are listed the various recommendations which were thought best treated by the local otologist directly (Table 2). One thousand and sixty-nine of the 1,471 children seen at the program otological clinics were thus referred. Eighty-two were found to be clinically normal and not in need of further medical care for the moment. One hundred twenty-nine children were treated in the otological clinic, for the removal of cerumen. Seventy-three children had wax in one or both ears but also required other treatment. These were referred for wax removal and other indicated treatments to the local otologist. Thus a total of 202 children were aided by removal of wax from either one or both ears. This number represents 13.7 per cent of the children referred by audiometric criteria, which is quite low in contrast to some statistics derived from previous projects where cerumen was blamed more frequently for the hearing loss discovered by audiometry.

It might be emphasized here that, in many instances, the presence of obstructing cerumen in the ear canals was not in itself enough to account for the audiometric findings. It was often the case that other pathological conditions were found co-existing and these, too, required attention before hearing improvement could be expected. A single child, for example, might require adenoidectomy, followed by radium therapy to the nasopharynx, along with dental care and anti-allergic measures. Thus the total number of recommendations in Table 2 is greater than the number of children referred. In most instances a child required two, three or even four different therapeutic measures in order to give him every possible benefit from the hearing rehabilitation and conservation program.

TABLE 2. Number of treatments recommended for 1,069 children referred to local otologists in Will County Hearing Survey.*

Tonsillectomy and adenoidectomy	330
Adenoidectomy without tonsillectomy	254
Radium therapy	637
Total	1,221

*Multiple treatments frequently were recommended for one individual.

Occult foreign bodies removed from the nose and ear were not without interest. Parts of a pencil, wood and lead included, were removed in one instance from the right nasal cavity and in another from the external ear canal. The broken tip of lead pencils was also a frequent offender in the external ear canal. In numerous instances hairs were flushed out from the ear canal where they were creating uncomfortable crackling noises. One large cockroach embedded in wax was flushed out.

Gauze packs or wicks were removed on several occasions from the external auditory canal. These usually had lain dormant for many years. Attention is directed to this possibility so that careless oversight may be avoided. It is advisable for the otologist to make it a practice to account, personally, for all wicks inserted therapeutically into the ear canal of a child. It appears that parents cannot be entrusted with this task.

Forty-eight children (2.9%) did not present themselves for otological examination at the program clinic or elsewhere after having been advised to

do so. No single explanation can be given for this fact. Some parents, however, refused to accept the idea that their child had any hearing loss whatsoever since the youngster 'heard everything,' and therefore they saw no reason to have their child examined. The county health nurse played a valuable role in helping to explain the significance of the above findings to the parents during the home visits.

Of the 1,069 children referred to the local otologist from the otological clinic, 330 were advised to have tonsillectomy and adenoidectomy (approximately 30%). In 254 instances adenoidectomy (without tonsillectomy) was recommended (23%). (See Table 2.) Adenoidectomy was usually suggested under two circumstances: (1) Cases in which adenoidectomy had not previously been performed and in which the adenoids were seen to be, or were felt to be, large in bulk and interfering with the function of the nasopharyngeal tubal orifice, and (2) cases in which adenoidectomy had previously been performed but in which the adenoids had regrown into a large irregular bulky mass. It was felt that radium treatments alone would not be enough in these situations.

It might be noted that the examination of the nasopharynx was not difficult in most patients. A child of six tolerates an ear, nose and throat examination much better than is generally credited. Furthermore, finger palpation was not without diagnostic merit. This was of significance where the adenoids had not been previously removed, or where they had regrown extensively and presented a large bulky mass to palpation. The nasopharyngoscope was used in children. A Yankauer type of nasopharyngoscope was rarely used and was most resented by the children.

Six hundred and thirty-seven of the 1,069 children (59%) were advised to have radium therapy to the nasopharynx, either alone or in combination with other curative measures, in three divided doses in the accepted fashion. Radium was employed (a) to shrink down small regrowths of adenoid tissue or hyperplastic lymphoid tissue in the area of one or both Eustachian tubal orifices, (b) to inhibit rapid regrowth of adenoid tissue in children who had a history of repeated adenoidectomy, and (c) occasionally, in allergic patients, to inhibit the regrowth which is a common occurrence in these children as previously suggested.

Educational Recommendations

The educational side of the program was always kept in mind when clinically evaluating the child with hearing loss. A child with a unilateral hearing loss is not deaf, but this situation could become an educational and social hardship for him if not properly understood by everyone concerned. The examining otologists, when confronted with this situation, recommended to the school principal that the child be seated in the front row with his better ear nearest the teacher and his inferior ear to the wall. The fact was noted on the child's permanent school health record. Psycho-social aspects relating to each individual problem were discussed at the clinic by the otologist for the guidance of both the child and the parents.

Children with bilateral hearing deficiency were seated in the front row, center, within 48 hours after otological examination. These temporary educational recommendations were activated quickly so that no time would be lost educationally while the other associated treatments along audiological or medical lines were being arranged for or were being put into effect.

Two hundred children (13%) of those examined otologically at the program clinics were advised to have a change in their seating situation at the various schools. Fifty-seven children were advised by the program otologist to attend special speech cor-

rection classes provided by the local school board at certain schools in the County and also by itinerant speech and lip-reading instructors who visited all indicated schools at regular frequent intervals. In many instances, poor speech had resulted because of impaired hearing.

Later, a special committee of four members, consisting of representatives from the local school system, the local health department, the local otologists and the educational representative from the state advisory committee on hearing, convened in Will County and evaluated each case record and prepared permanent plans for the future educational adjustment of each indicated child.

Summary

1. The Will County Hearing Survey screened, by audiometric techniques, the entire school population (20,663 pupils in 188 schools) and examined otologically 1,471 children in a period of seven months.

2. A total of 1,646 children, or 7.9 per cent of all children screened, were found to have some degree of hearing loss, either of an occult nature (high tones only), or in the speech range, in one or both ears.

3. A total of 1,471 children of the 1,646, or approximately 90 per cent were examined by the program otologists in the presence of the parents, and tentative diagnoses and recommendations were made.

4. A clinical syndrome of allergic rhino-salpingitis seemed suggestive as the cause of hearing loss in 12 per cent of the children.

5. A continuous follow-up was maintained from the moment of screening, through the otological clinics, to the referral to the family physician or otolaryngologist of choice. Diagnosis, recommendations and treatments were recorded on a permanent program control chart maintained in the Will County Health Department.

6. Educational follow-up and rehabilitative follow-up were maintained.

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Some Basic Considerations in Teaching Language to the Deaf

Louis M. DiCarlo

IN SPITE of its extreme complexity, linguistic behavior remains a most pervasive and predominant form of human response. Without the great socializing influence of language, man's psycho-socio-economic activities would suffer serious curtailment. Our present intricate civilization may be a derivative of shared language accumulations. Even many of our psycho-social ailments may be interpreted as language maladjustments. Without language responses man would surely be a destitute creature.

Reports in the literature attempted to chart stages in infant language growth as early as the middle of the last century. In recent years scholars have projected a prodigious amount of research which seems to indicate the emergence of definite trends in child language development. An analysis of this research reveals the dominant lines of investigation focused about inquiries dealing with relationships of language growth upon child mental, emotional, and social maturity.

Piaget (*13*) stimulated a novel approach to the controversial topic of the relationship between language and thought. He differentiated between adult and child thought structure in terms of language behavior that revealed egocentricity or true social communication.[1]

A more plausible evaluation permits viewing this relationship as mutually interactive (*2*). Pioneers in teaching language to the deaf emphasize this inclusive relationship between language and thought (*4, 5, 6*). Fitzgerald (*4*) reports that 'straight thinking' is the basic objective of her *Straight Language for the Deaf*.

Examination of this vast research on language development brings into focus a basic consideration: Language behavior (excluding gestures) begins with infant speech. As needs arise and the organism manifests readiness, moreover, reading and writing represent successive stages on the language continuum. Language for deaf children, accordingly, embraces activities of all the communication arts. Since deaf children exhibit serious deficiencies in speech behavior, deficiencies in other aspects of language performances might be expected. That these deficiencies exist, research unequivocally demonstrates (*3, 8, 10, 15, 18*). Pugh (*14*), Sheldon (*16*), and Thompson (*17*) suggest that we need not accept reading retardation as a necessary performance in deaf children's achievement. Yet reading is merely one aspect of language, and an aspect that comes later in the communicative process. To

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[1] In general American scholars have not substantiated his findings but it may be that the semantic orientation of these writers permits disagreement in terms of absolute criteria.

a certain degree earlier language experiences may facilitate reading instruction at the appropriate time. Methods of instruction based upon key techniques applied during early infancy promise more commensurate progress with amount of time and effort expended (*7, 8, 9, 10*).

Research also indicates that development of adequate language behavior rests on efficient hearing responses. 'Normal mental development and equipment depend in the crucial years of early childhood, and to a considerable extent throughout life, upon the sense of hearing' (*3*). Hearing, moreover, is a sociological imperative. It provides the most effective avenue for the acquisition of the child's complex linguistic equipment. While research has still to establish the contour along the developmental continuum where language deficiency becomes crucial in child growth, we offer the hypothesis that the skill required for adequate language adjustment begins shortly after birth.

When deafness compels the child to develop meaning through other sensory and motor modalities, his language responses take on a fragmentary character. These partial responses fail to satisfy his motives so that they embrace less and less the phenomenon of his environment. Attempts to adjust through language responses lead to uncertainty and provide constant threat to his security (*1*). Thus, he fails to develop linguistic reactions that might provide tension-reducing behavior (*11*).

Language instruction for deaf children must integrate all aspects of communication arts. It should utilize whatever residual hearing they possess at the earliest possible time. This means that parents must be incorporated as active partners in teaching language to deaf children. Modern advances in electronic devices offer much for those who will utilize them advantageously. Language instruction for the deaf child, furthermore, should begin with speech through the use of hearing as much as possible. A period of pre-linguistic training should help these children capitalize on acoustic clues of speech situations. The advocators of the oral method have suggested that language be presented first through lipreading, second, that speech follow the visual presentation, and third, that writing and reading follow lipreading and speech.

Those who believe in the aural approach suggest the process of language presentation should begin with persistent amplification of sound, speech, and lipreading simultaneously during infancy. A period of pre-auditory training should be exploited during which completed sentences with key words be presented for developing hearing and speech responses as correlatives in the larger area of communication. Since the quality of children's language responses may be influenced by the answers they receive from others (*12*), replies to deaf children's questions should be of a give-and-take nature. During a visit to a very sick boy of 11 in a hospital he was asked how he felt. He replied, 'I feel fine,' while he was almost passing away. This same child answered other questions equally mechanically. Language to him was simply a stock of stereotyped verbal responses.

In addition, the meticulous pains to make the deaf child's language work exactingly specific should be questioned. In infancy, hearing children do not always have specific language stimuli presented to them.

Research also indicates that hearing children's first words, although generally composed of nouns, are response correlatives of complete single actions or ideas (*19*). In vocabulary building for deaf children, presentation of words should include nouns, verbs and other parts of speech that will facili-

tate ideation early. All vocabulary should be put into immediate, functional communication requirements. Repetition should be devoted to intensional and extensional language growth. This implies repetition with various usages for refinement of language responses.

Reading and writing, similarly, should develop through context and meaning. The concept of readiness must be evaluated not in terms of readiness for certain behavior but for experiences which will permit profitable learning at a later date. In the matter of reading and writing, language presentation should avoid single word stimuli, but the preliminary phases of holding printed materials, developing left-to-right eye movement coordination with proper fixation, and line-to-line reading should fit into the framework of suitable learning theory. All of this precaution should make language work more meaningful. In this way, we shall reduce development of word readers and non-readers after their academic training.

Proper language material which will provide pupil interest, pupil purpose, and pupil motivation that meets the needs of emerging situations should be constantly accumulated, refined and revised. Deaf children will not learn language by filling in elliptical sentences or supplying correct verb forms. Language instruction for deaf children must be *a posteriori* as well as *a priori*. It must be functional, adapted to emerging needs, spontaneous and live which will provide the cultivation of a feeling for language as communication. Also language work should provide opportunity for creative abstraction of general principles for future language growth.

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Working with Parents of Stuttering Children

Hildred Schuell

Most speech correctionists are agreed that in working with children who stutter, the kind of speech the child has is not of primary importance. In the approach to therapy it is constantly necessary to underline that statement. What must be changed, fundamenally, is the child's feeling that something is wrong with his speech, and the accompanying fear of ridicule or rejection. In its place must be developed a feeling of acceptance so secure that there is no more room for anxiety, so that in his family and his school environment, and on his level, the child is able to talk eagerly and confidently and without apprehension concerning the listeners' reactions to him or his way of speaking. It may take a long time and much concerted effort to bring about the changes in the child's environment, in his relationships with people, and in the way that he feels about himself, which will permit this growth and adjusting process to occur. It is essential, however, for language is first and last communication, and conditions which tend to make communication difficult and unrewarding inevitably alter and inhibit the manner of expression. Thus it is impossible to escape the need for working with the parents of the young child who stutters.

Specific Techniques

Parents of stutterers do not form a homogeneous group. They differ, in fact, in every possible manner. There are techniques that can be worked out with individual parents to be used in particular situations. It would be absurd to suppose that there were any easy bag of tricks which could be passed out indiscriminately to all parents of all young stutterers. There can be no substitute for detailed knowledge of the factors which are operating in a given situation.

The techniques to be described are those for a series of parental interviews. How many will be required cannot be predicted in advance. Minimally, except in unusual cases, about four interviews spaced over a month should be planned. If this is impossible, it would probably be about as effective in most cases to do nothing at all.

The First Interview: The object of the first interview is necessarily to gain as much information as possible about the parents as well as about the child. The parent must not be placed on the defensive and must be encouraged to talk as freely as possible. Devices which have helped to make the first interview effective include the following:

1. The meeting should be by appointment. Many experienced correctionists like to have the first interview in the privacy and professional atmosphere of the clinic office. They believe also, that in coming to keep the appointment, the parent has assumed a responsibility in cooperating with the clinician which tends to establish a better relationship at the start. This need not be an inflexible rule, but the speech correctionist should remember that an unannounced visit to the home

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may find the parent at a disadvantage, and create unnecessary tension and defensiveness, and perhaps even hostility.

2. The first meeting usually tends to be more effective if only one parent is present. The situation becomes more informal, more complete rapport can be established, and discussion of pertinent problems tends to be less guarded.

3. It is usually more effective to begin informally, with an invitation such as, 'Tell me all about Johnny,' than to confront the parent with a long questionnaire or history to be filled out. The friendly interest of the clinician can elicit more complete and unguarded information than the direct questionnaire which the parent may resent at first. Necessary information can be secured later, and it is important to give the parent an opportunity to consult the therapist about the problems which are uppermost in relation to the child or the family situation. Family conflicts and family problems often have a direct relationship to the stuttering child, and the parent is often eager to talk about them if given opportunity or encouragement; some parents have a real need for this kind of therapy. In the first interview it is almost always possible to get the parent to discuss the problems which the child has presented in the family group. From these statements it is possible to learn a good deal about the way that family problems tend to be handled, the acceptance or rejection of the child which is present, and to discover leads for further investigation.

4. The *Vineland Social Maturity Scale* is often helpful, not only in getting specific information about the child's behavior, but also about the behavior and attitudes of the parent in relation to the child.

5. Plans should be made for a follow-up interview, with both parents present.

Second Interview: In the second interview it is usually possible to find out the ideas which the parents have held about stuttering, to answer some of their questions about it, and to begin to give them information about the way that stuttering begins and develops. It is also necessary to give them something constructive which they can begin to do. Assignments like these may be used:

1. For one week both parents are to give the child opportunities to talk to them every day. They are to take time to listen attentively, to show interest in what he is telling, but never in any way to comment on how he talks.

2. They are to instruct other members of the family to make no comments on the child's speech.

3. During one week, they are to make observations of the child's speech in relation to the situations in which it occurs. Mimeographed forms which can be checked by the parent each day produce more meaningful records and demand a minimum of time to use. They should provide for about three observations to be made each day, at specified times; mealtime, play and bedtime are usually convenient. They should indicate who was present when the observation was made; if the child talked as much as the others, less than the others, or more than the others; if he stuttered as much as usual, less than usual, or more than usual; what he did when he stuttered, whether he stopped, repeated words or syllables, forced words out, or exhibited any other unusual behavior. Finally, the parent should be asked to describe any incidents during the day when the child was corrected or punished, when he cried or became upset for any reason, and to tell specifically what the child did, whether he protested, argued, showed anger, pouted, left the room, cried, or reacted in any other way.

4. If the record which is returned seems to have been made in a perfunctory manner with no indication of parental insight, it is usually advisable to follow up with another week of record keeping. This time the parents report verbatim the requests the child made and the answers received. To this they add each admonishment given during the day. Parents are often unaware of the amount of this kind of thing which they do unnecessarily.

The Third Interview: In this interview the speech correctionist is able to go over with the parents, the data gathered by assignments, and from them and the parents' comments form an idea of what is to be worked on or changed. The parents are usually ready to cooperate more understandingly than they were before they had made any observations of their own. They are often ready to tell the clinician what they have done wrong and what they intend to do differently. The following are excepts from actual interviews:

> Sara's trouble is that she never gets a chance to say anything. The rest of us talk all the time, and she can't get anyone to listen to what she wants to say.
>
> I think we've always expected a little too much of George. We've wanted him to be perfect and have forgotton that he's a little boy.
>
> We live with my parents, and they are quite old. Everything that Bobby does seems to bother them. I have to try to keep him quiet and see that he doesn't do things that disturb them. We all tell him what to do and what not to do, until he doesn't know what is expected of him.
>
> I don't know whether you read about it or not, but Richard has an uncle who is serving a prison term for embezzlement. I think that we've been afraid to let Richard out of our sight, for fear that he'd make the wrong kind of friends and get involved in something wrong. We haven't dared trust him, for fear that something terrible might happen to him, and we'd have to blame ourselves for not supervising him more closely. I know that he resents it.

These are only samples of the kinds of reports a speech correctionist receives from parents when they begin to be aware of what they are doing to their children, and what is happening to the child as a result—a result, very often, of their own tensions, conflicts, and insecurities.

If the clinician still has to take most of the initiative, it is important to remember that everything cannot be changed at once, that parental insight often develops slowly, and that a specific assignment that can be carried out and reported on is better than a great deal of theory. Parents can be asked to do such things as the following:

1. To plan a definite activity each week for the child to share with them, in order to develop a feeling of companionship. It may be going out for a supper of hamburgers and malted milk, going to town, visiting the zoo, going fishing or hunting, playing checkers, making a birdhouse, or a surprise dessert for dinner. The only requirement is that it involve time spent pleasantly together.

2. To plan a definite time during the day when the child can have some time with one or both parents, and receive full attention.

3. To plan a program which will help the child to develop confidence in his ability to do something. This should be something the child wants to do, and from which the child, and not primarily the parents, derives satisfaction. It may be learning to skate, to swim, to take care of rabbits, a dog, or a canary, having a paper route, or being a campfire girl, as long as it is something the child really wants to do and not beyond his ability to accomplish adequately. The child should select the activity for himself, because parents often have a way of expecting too much, or sometimes too little, from their children. The parents should be encouraged to show interest in the child's progress but cautioned against

too zealous expression of it, lest they inadvertently exert too much pressure, making the activity theirs and not the child's, thereby destroying the child's pleasure in it.

4. To plan situations which will help the child to build confidence in his ability to talk. He should be encouraged to go to the door, to answer the telephone, to perform errands, to tell jokes and stories and riddles, and even to make puns. He needs to find out that he can do these things, and if the way in which he does them is accepted in a matter-of-fact manner, he will begin to enjoy them and to learn that talking can be fun.

Perhaps the above sounds elementary, but probably every speech correctionist who has worked with children who stuttered has found some who were forbidden to answer the door or the telephone, or discouraged from talking when strangers were present. Perhaps all therapists could cite cases like that of an eleven-year-old boy who was not allowed to play with his sister's children, who lived in the same house, lest they 'catch stuttering' from him. It is not surprising that this boy ran away from home frequently, stayed away for longer and longer periods, and eventually began to steal money to use for lunches, street-car fares, and movies, and to buy treats for other children in an effort to bribe them to accept him. Many resources were used to help this family work out its problems, but probably the single most effective measure was getting the boy into a Boy Scout troup with an understanding scoutmaster and procuring a uniform for him. This badge of belonging was his most cherished possession, and he worked diligently for a month to repay the purchase price.

Conclusion

Subsequent interviews are planned as necessity arises, for the purpose of checking progress, giving encouragement, analyzing difficulties which appear along the way, and making further suggestions. Parents usually want to help their children and are willing to try, if they know what to do. They need direction and support, and sometimes a good deal of help, particularly when, as often happens, they have serious unsolved problems of their own.

Therapy with the parents needs to be supplemented, of course, by work done in other areas which affect the child; it is only a part of the picture, particularly for the older child who goes to school and is or needs to be part of other social groups. Parental and family relationships are, however, so fundamental that if they are disturbing the child can scarcely be expected to make happy adjustments elsewhere.

An eighteen-year-old who made good progress in a speech clinic but relapsed when he returned home reported, 'I don't ever talk at home. I tried, but they don't want to hear me stutter, so I just clam up.' If to 'clam up' is a lesson learned daily by the stuttering child, at home or in the classroom, we may well ask ourselves seriously, of what use is speech correction?

Home Adjustment of Stutterers versus Non-stutterers

Melba Hurd Duncan

THE limited purpose of this investigation was to answer the question, Do the responses to items in the 'home adjustment' area of a personality inventory make significant differentiation between college age stutterers and non-stutterers? In other words, as college stutterers look back on their relationships with parents and members of the family, do their answers to questions about love and affection in the home, nervousness of parents, quarrels in the family, etc. differ significantly from answers made by college non-stutterers?

SUBJECTS

The subjects were 62 stutterers, 49 men and 13 women, and a like number of men and women non-stutterers. The non-stutterers were students assigned to clinic for various types of articulatory disorders. Among the latter group were mild to extreme (s) and (ʃ) problems, a few students with nasality, some cases of generally inefficient articulation, a few cases of marked degree of foreignisms, etc. As will be mentioned later, the use of this group for comparison probably loaded the investigation against significant differences between the two groups. The members of both groups were students at Brooklyn College, and were in attendance at the Speech Clinic when answers to the inventory questions were obtained.

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The stutterers ranged in age from 16 to 27, the non-stutterers from 16 to 25; the median age in each group was 18 years. Eighty-five per cent of the stutterers were classed as freshmen or sophomores, as against about 80 per cent of the non-stutterers. The remainder were juniors or seniors, with the exception of the one stutterer who was over 25, a veteran who was classed as a 'special' student.

The stutterers ranged in severity of speech difficulty from 2 to 5 on a rating scale of five points in which 1 represented a very slight degree of difficulty and 5 an extreme degree. Doubtful cases on whom there was no rating of degree of severity of stuttering, or whose rating of 1 indicated a very slight degree of stuttering, were eliminated from consideration in this comparison. The rating had been made after the stutterer had been in the clinic long enough for the experimenter to observe his speech in a variety of situations. In most instances degree of severity was also rated by the clinician who assigned the student to the clinic. No attempt was made to select the non-stutterers on the basis of degree of severity of speech problem.

PROCEDURE

The personality questionnaire employed was the Adjustment Inventory by Hugh M. Bell, which has served in a considerable number of investigations on speech and personality problems (e.g., *1, 2, 3, 5, 9*). There are 35 questions under the classification, Home Adjustment, among the total of 140 questions which make up

the inventory. (Of course the classification is not labelled for the person answering the questionnaire.)

Item analysis was made of the 35 home adjustment questions on the inventory. Answers were tabulated for the three possible responses: 'Yes,' 'No,' and '?.' The chi-square technique as recommended by Garrett (*4*) was used for comparing the responses of the two groups in their answers to each item. The results indicate the degree of probability that an obtained difference represents a real difference rather than one that can be attributed to chance. In other words, this procedure is useful in determining whether a certain question differentiates between the two groups. A probability (*P*) of .02 or less is taken as a significant deviation from expectancy, and means that there are less than two chances in 100 that the difference is due to chance.

Results

Five questions among the 35 on home adjustment presented chi-square values which show unmistakable differentiation between the stutterers and the non-stutterers. Eight others yielded chi-squares which show that a difference is reasonably sure. Of the five most significant questions the first four indicate less than one chance in 100 (in terms of the chi-square formula) that the difference in response between the stutterers and the non-stutterers can be attributed to chance in sampling (*P* is less than .01). The fifth question yielded a probability between .02 and .01 and can therefore be included among those which almost certainly differentiate between the two groups since there are between 98 and 99 chances in 100 that the difference is a real one.

The five differentiating questions were as follows:

1. *Have you often felt that either of your parents did not understand you?* Over half (56.4 per cent) of the stutterers said 'Yes' to this question as compared with less than a fourth (24.1 per cent) of the non-stutterers. (Chi-square is figured in terms of the actual numbers, not the percentages.)

2. *Do you feel there has been a lack of real affection and love in your home?* Twenty-three per cent of the stutterers said 'Yes'; only 1½ per cent of the non-stutterers.

3. *Do you think your parents fail to recognize that you are a mature person and hence treat you as if you were still a child?* Approximately 27 per cent of the stutterers said 'Yes'; only about 10 per cent of the non-stutterers.

4. *Did you ever have a strong desire to run away from home?* About one-third of the stutterers said 'Yes' (33.8 per cent), as compared with about 6 per cent of the non-stutterers.

5. *Do you sometimes feel that your parents are disappointed in you?* Approximately 47 per cent of the stutterers answered 'Yes,' as compared with about 23 per cent of the non-stutterers.

The eight additional questions which yielded differences on a lower level of probability, but high enough to be worth considering, included three with *P*'s of between .10 and .02:

1. *Is either of your parents very nervous?* *P*: between .05 and .02.

2. *Have you often felt that your friends have a happier home life than you?* *P*: between .10 and .05.

3. *Have you disagreed with your parents about life work?* *P*: between .10 and .05.

The remaining five among these eight indicate the possibility of a trend in that they yielded *P*'s of between .20 and .10, signifying about 15 chances in 100 that the differences between the two sets of answers can be attributed to chance. There is no conclusive evidence of a difference between stutterers and non-stutterers in responses to these questions:

4. *Has either of your parents made you unhappy by criticizing your personal appearance?* P: just short of .10.

5. *Do you occasionally have conflicting moods of love and hate for members of your family?* P: between .20 and .10.

6. *Have either of your parents certain personal habits which irritate you?* P: between .20 and .10.

7. *Did your parents frequently punish you when you were between 10 and 15 years of age?* P: between .20 and .10.

8. *Has either of your parents criticized you unjustly?* P: between .20 and .10.

The remaining 22 questions in the Home Adjustment area yielded no significant differences between stutterers and non-stutterers.

Interpretation

This limited investigation uncovered certain Home Adjustment questions which differentiate stutterers from non-stutterers in this population, but it is difficult to know which is the cart, which is the horse, or if the cart and the horse are on a 'personality merry-go-round.' Does stuttering cause a feeling of being unloved at home? Is lack of love in the home a causal factor in stuttering? Or do both stuttering and lack of affection and parental understanding merely reflect other more basic factors? The significantly greater frequency among stutterers of a feeling of lack of love and affection in the home, of being a disappointment to their parents, of being misunderstood by a parent, etc., might be just another indication of the greater incidence of neurotic characteristics among stutterers which has been claimed in a number of pieces of research. (Twenty-nine per cent of these stutterers had scores in the 'Unsatisfactory' range on 'Emotional Adjustment' as compared with 16 per cent of the non-stutterers.) Data from autobiographies (written after the personality inventory had been taken, and with no reference to it in the instructions) tend, however, to support the inference that parental attitudes *have merited* the evaluations of the stutterers on lack of love and affection, feeling of being misunderstood, relatively unhappy home life, etc. A few examples are illustrative:

> S.: My mother seemed always to be busy with the house and my father would keep to himself and read the papers in the evening when he came home. . . I think that all the time I was a child I had but two toys. . . I was beaten very regularly by my mother for any slight infraction of the rules, and by my father when he came home in the evening. That was about the only contact I had with him. He always said he couldn't be bothered with our 'nonsense' and 'stupidity'; these were his favorite words. As a result I feared him terribly. . . My parents never took us anywhere.
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> M.: My parents forced me to work with them down in a pushcart market. I would go to work straight from school. I never had time to play ball or hang around with any of the boys in my block. . . My father had many enemies among his fellow pushcart dealers and they seemed to wreak some of their vengeance on me. They were the first to comment that my face was tense when I spoke.
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> R.: My home life was not the best for a child like myself. My parents are both high strung. Both are easily upset emotionally. There were frequent quarrels between my mother and father. Sometimes very violent. This tended to upset me emotionally.
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> H.: The first conflict of my younger days that I can remember occurred when my mother and kindergarten teacher tried to change my writing from my left hand to my right. . . Another sourse of conflict came from the fact that I stuttered. My mother attempted to cure me by imitating me and laughing at me. . . Though I knew that I should love my mother, I found that I had only a deep hatred of her for many years.
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> P.: When I was four years old my mother took a job and put me in a day nursery. . . We had moved to an apartment at about that time which was located on the top floor and we were required to walk up five flights of stairs to get up to it. One of my habits was to run up the five flights and upon

getting into the house I would try to speak while out of breath. This is the first time I can remember 'stumbling' in my speech. My mother's reaction was to yell at me and try to get me to stop that 'stuttering.' (P. has gasping pattern of stuttering reactions.)

L.: My mother and older sister constantly criticized me for not having friends.

N.: My dislike (of new sister) was so strong I recall actually trying to do her bodily harm (by overturning crib in one instance). I began to stutter about that time.

W.: My home environment centering about my parental relations was marked by three important conditions: an absence of demonstrative love, an absence of sympathetic understanding and constructive help, and the exhibition of a very poor husband-wife relationship.

The emphasis has been shifting in recent years from analysis of the child to study of the parent. Clinical cases abound in the literature which indicate need for psychological guidance of the parents (e.g., *7, 10*) This is not the place to speculate on such questions as the following which are related to a few of the current theories of etiology: Does lack of love and affection upset neurological dominance? Does it function to fix psychologically the poor coordination which may be due to slow development of myelin sheaths on the nerves (*8*), or may be due merely to the normal non-fluency of the developing child (*6*)? Does lack of love overload the neurones of the central nervous system with anxiety and create a traffic jam—to use Cybernetics terminology (*11*)? The limited facts presented here do demonstrate an unwholesome situation somewhere in relations between stutterers and parents in this population.

Wood's study on articulatory cases (*12*) presented data on their parents which the investigator concluded showed a significant amount of emotional maladjustment among the parents of the children with articulatory defects. If that is true, this comparison of stutterers with students who had articulatory problems was loaded against finding significant differences, since both groups may represent a considerable amount of neuroticism among parents. A group of non-clinic students should also be compared with the stutterers.

It should be noted that the student population at Brooklyn College is a rather special one. A Master's thesis revealed that more than half the entering students (54 per cent) in a typical semester at Brooklyn College reported both parents to be foreign-born, and about a quarter (24 per cent) had one foreign-born parent. More than 75 per cent of the foreign-born parents were born in five European countries with Russia and Poland furnishing the bulk of this group. The population in the present study was fairly representative of the general student population. About 55 per cent of the stutterers reported that both parents were foreign-born; only 22 per cent had both parents born in the U.S. As might be expected, the percentage of foreign-born was somewhat higher among the non-stutterers since they represented articulatory problems in the clinic population. Even if it is assumed for the moment that cultural patterns inimical to the wholesome emotional development of the child actually were present in the parental background of this student population, this study shows that a significantly greater number of stutterers must have reacted to these factors, or they must have been more acute than for non-stutterers of the articulatory case group. It would be interesting to see if the same pattern of differences emerged in another population.

Evaluation

The disadvantages of this limited study are many. Among them are the following:

1. The number of subjects is small—62 stutterers and 62 non-stutterers.
2. Chi-square analysis provides no index of degree of relationship, but only the probability of association. It varies with the size of the sample.

3. The non-stutterer group, as mentioned, was probably not as revealing for comparison as a non-clinic group of students would have been.

4. A questionnaire directly designed for the purpose of the study might have been a more useful instrument.

The advantages of the study included the following:

1. A relatively homogeneous group of stutterers and non-stutterers was used, as has not always been true in investigations on stuttering (because of the difficulty of assembling enough cases).

2. The personality inventory was administered under relatively favorable conditions to both groups in the clinic setting.

3. The number of cases, although small, is larger than that reported in many other studies on stuttering.

SUMMARY

Item analysis was made of the 35 questions on 'home adjustment' in the Bell Adjustment Inventory as answered by 62 stutterers and 62 non-stutterers. Results of chi-square analysis show that there is a reasonable expectancy that some questions differentiate stutterers from non-stutterers in the Brooklyn College student population. The questions yielding significant differentiation in terms of chances in 100 that the difference is a real one and not due to chance were:

1. Have you often felt that either of your parents did not understand you?

2. Do you feel there has been a lack of real affection and love in your home?

3. Do you think your parents fail to recognize that you are a mature person and hence treat you as if you were still a child?

4. Did you ever have a strong desire to run away from home?

5. Do you sometimes feel that your parents are disappointed in you?

What the differences mean is not probed by this limited investigation. It can only be said that in this population of Brooklyn College students a significantly greater number of stutterers than non-stutterers felt a lack of affection, love, and understanding in their homes.

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Studies in Clinical Techniques

IV. Rapid Repetitive Manipulation of the Mandible in Dysphonia

Martin F. Palmer

CORRECTION of dysphonia, involving the production of relaxation of the suprahyoid group of muscles, often proves difficult, especially in adults. The usual voluntary relaxation techniques, such as those of Jacobson, so commonly used in speech correction clinics, prove difficult to apply in this area. The subject has difficulty in developing an awareness of tension and does not easily follow instructions to control this group of muscles.

Since the anterior suprahyoids are mandibular depressors, most clinicians find relaxation of these muscles very helpful in obtaining relaxation in all of the suprahyoid muscles, probably due to irradiation in the central nervous system. Slow passive movements of the jaw are unsatisfactory since most subjects either strongly resist such slow movements or follow the movements so skillfully that neither the instructor nor the subject is able to determine when the desired effect is achieved. Froeschels has suggested a voluntary 'jaw wagging' technique which is often useful.

The following method for obtaining relaxation of this area, including the suprahyoid muscles, has been used with considerable success by the author in cases of dysphonia, and differs from that suggested by Froeschels.

The subject is asked to allow the 'jaw to relax' as much as possible. The instructor then takes the chin gently between the thumb and index finger and begins a rapid up and down shaking movement. If the jaw is well relaxed, the result will be a clicking of the teeth. It is not possible for the subject voluntarily to lower and raise the mandible in such a fashion as to produce this loose and rapid click. If the teeth do not click on this manipulation, the subject is then instructed to try to 'keep the jaw loose enough' to allow the teeth to click. The instructor may demonstrate what is wanted on himself. Interestingly enough, few subjects fail to achieve the desired relaxation after a few trials when it is suggested in this fashion. The technique bears an interesting resemblance to those used in reducing athetoid reactions in lesions of the extrapyramidal system.

The next step is to see that this relaxation is maintained during phonation. The subject is usually instructed to produce a prolonged [ɑ] or [ʌ]. He is told that the instructor wishes to continue clicking his teeth during this phonation—that such a maneuver will alter the sound, but that this is to be ignored. The subject is to keep paramount in his mind the goal of teeth clicking and allow the sound to come out as it will. If the subject is incapable of following such instructions, it is even better simply to ask for phonation rather than a specific vowel sound.

Usually the moment phonation starts the suprahyoid muscles tense and the jaw resists upward propulsion by the clinician's hand, but again,

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with a little practice, the subject is usually able to achieve and maintain the desired relaxation during phonation.

Once the initial pattern of relaxation during phonation is achieved, suitable steps will suggest themselves to the clinician for carrying this method of phonation over into all speech. Froeschels' technique of 'breath play' is found a valuable adjunct to the above.

Apparently the success of this technique is largely due to the introduction of a concrete and tangible method by which the subject may from moment to moment check the effectiveness of his relaxation in this area. The subject can practice this technique on himself. Probably his most effective method of manipulating his own jaw is to double his fist and rapidly poke himself under the chin. If the masseter, internal pterygoid and temporalis are relaxed, gravity will then drop the jaw in time for the next upward propulsion to be effective.

SUMMARY

Rapid repetitive manipulation of the mandible is suggested as an adjunctive method in attaining and checking relaxation of the anterior suprahyoids in cases of functional dysphonia.

THE description of a 'good' or 'bad' technique in the laryngeal blocks of cerebral palsy cannot be related to specific recipes. If a speech clinician is convinced he can gather together five little children who have cerebral palsy and ask them to be 'rag dolls,' does the inconvenient fact that by definition such an event is impossible vitiate this approach? (For, of course, the cortex cannot 'be a rag doll' until it has been one, and therefore the whole seance is rather pitiable.) Will laryngeal blocks be circumvented under these circumstances? They may, quite possibly. But not in the way postulated by the clinician.

For example, let us assume that all the children are tension athetoids, all intelligent, all speechless, with severe laryngeal blocks. Child 1 may improve because. . . (Here the speaker described five different hypothetical cases.)

Although these examples are hyperbolic, it is probable that if the clinician were even to suspect the actual events transpiring in these five different brains, some other technique would be adopted rather than that of asking children made of steel to act as though they were 'stuffed with rags.'

—*Excerpt from a paper entitled 'Laryngeal Blocks in the Speech Disorders of Cerebral Palsy' presented at the 1949 meeting of the Central States Speech Association by Martin F. Palmer.*

Prognostic Factors Related to Language Rehabilitation in Aphasic Patients

Jon Eisenson

In a comparatively recent bulletin (*2*), the Central Office of the Veterans Administration directed that priority for treatment of aphasic patients be given to World War II veterans with traumatically incurred disabilities. It is assumed that the decision was based on criteria established within the Veterans Administration. It is also safe to assume that therapy was not available for all the aphasic patients being otherwise cared for by the Veterans Administration and that some basis for screening and selection had to be made. Those who work with aphasics are frequently placed in a position in which it must be decided whether a patient will benefit sufficiently from treatment to justify accepting him for that purpose. The decisions of the author are at least in part determined by a set of criteria or prognostic factors born out of experience with approximately 100 adult aphasic patients ranging in age from 18 to more than 60 years. The prognostic factors are relevant, of course, only to those patients with stabilized pathologies.

Prognostic Factors

Age of patients: The writer has found that younger patients as a group do better, in general, than older patients. Recently, upon going through the closing notes on a group of 21 patients worked with in one Army Hospital, the patients were divided into two categories. The first category included those patients who have made good recoveries in their language abilities after a year or less of training and the second category included those patients whose progress was slow or who had to be recommended for discharge to veterans' facilities because little or no progress was noted as a result of training. The notes included 13 cases of favorable progress and eight cases in which the progress was definitely poor. The age range of the poor-progress patients was from 22 to 47 years, with the average age of 31. This compared with an age range of from 20 through 32 years for the good-progress patients and an average age of 24. The number of cases, of course, is small and it would be unscientific to attempt to see anything but a trend in these figures. The same trend has been noted, however, among the veteran patients in New York Branch Area so that the original impression has been reinforced.

Time before Initiating Training: A second prognostic factor was the matter of elapsed time between the onset of the aphasic disturbance and the initiation of a program of therapy. There is little question in the author's mind that the sooner an active language therapy program is begun the better the patient's outlook is likely to be. The patient who begins to work as soon as he is physically able to do so is not given much chance to develop non-linguistic methods of communication or to feel so sorry for himself that

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he does not try to improve. He does not have time to indulge in hopeless frustrations and to become convinced that his impairment is beyond help.

No controlled experiments are known to have been reported as to the relative progress of patients for whom a training program was initiated early and those for whom a training program was delayed. A somewhat informal experiment, however, was conducted at an Army Hospital. The author was authorized to initiate a language therapy program with all aphasic patients in this hospital. Through some misunderstanding, the names of only about half the patients with brain injuries and aphasias were provided. Eight months after the program was started, a dozen additional patients were 'discovered.' They had been in the hospital for as long a time as those patients with whom the staff had been working, but their spontaneous language recovery showed them to compare unfavorably with those patients who had been receiving training. Many of the new group of patients presented evidence of psychological obstacles which had to be overcome before direct language training was possible. Several were convinced that their cases were hopeless and that language learning for them was an impossible task.

More recently the same general picture has been noted in civilian patients whose aphasias were non-traumatically incurred. It may be, of course, that given an indefinite period of time an aphasic will recover as much as he is likely to recover as a result of training. Training, however, does speed recovery and prevents the building up of psychological obstacles which are not always possible to surmount.

Personality: It is not possible, of course, to give a severely brain-injured patient a personality inventory to determine whether he is, or was, one personality type or another. From what could be gathered on the basis of talking with patients, their relatives, their friends and from reviews of their case histories, this general observation may be hazarded. The patient with an outgoing personality who is not given to doing much introspection, who is willing to take a chance on making a speech response even though the response may be a wrong one, is much more likely to improve to a point approximating his pre-injury state than is a patient who is withdrawn, introspective and generally inhibited (*1*).

Other traits which make for poor progress include rigidity, tendencies toward concretism in thinking, and psychopathic behavioral patterns.

Euphoria: The persistence of a euphoria for any appreciable time after the onset of the cortical insult and after the patient has had adequate opportunity to realize the amount of his linguistic disturbance is a factor pointing to poor prognosis. Several patients have gone from a state of euphoria to one of acute depression when the hoped-for spontaneous recovery did not take place. Persistent euphoria might well be interpreted as the patient's wish to escape from reality and to avoid coming to grips with his own limitations. It is, of course, tied up with a general personality picture which the patient also reveals in his non-linguistic behavior.

Level of Aspiration: Patients with a modest level of aspiration who may have hoped but did not expect to make full recovery seemed to do much better than did patients who set their goals too high and who expected to be as linguistically proficient as they had been before their illness and linguistic disturbance. It is natural, of course, for the patient to wish to achieve a state of performance which would bring him up to his former proficiency level. Unfortunately, so much anxiety is generated when the patient is encouraged to believe that he will in a short while reach that level of performance that disappointment is inevitable. It is much safer to present a

modest goal of achievement for the patient and to have him reach or surpass it in a short while than to make promises to him or encourage him to make promises to himself which may be beyond his ultimate capacity. It is easier to establish a new and higher goal as training progresses than to have to drop or reduce the goal when faced with failure.

Cause of Disturbance: In general, it was found that patients whose disturbances were associated with traumatic injuries improved more rapidly than did those patients whose aphasic disturbances were associated with vascular non-traumatically induced illnesses. It is only fair to report, however, that most of the non-traumatic patients fell into the older age group, so that actually it may be the factor of age rather than the cause of the disturbance that makes the difference.

Over-dependency: Over-dependency upon the speech therapist or upon any one person in the environment of the aphasic patient is another factor making for a guarded or poor prognosis. Speech clinicians sometimes permit themselves to be leaned upon too heavily by their patients. This should especially be discouraged when working with aphasic patients. Some aphasics are inclined to talk only for one clinician unless they are required to do otherwise. Those patients who are encouraged to do their talking to and in the presence of persons other than the clinicians have seemed to progress more rapidly and present a more hopeful picture than have patients who became strongly dependent upon one person in a therapeutic situation.

Physical Condition: In general, the better the physical condition of the patient the greater are his chances of improvement. This is understandable because improvement in physical condition is generally correlated with an increase in the number of environmental contacts the patient can make. Consequently, the patient has more opportunity for direct as well as indirect learning. In addition, physical improvement frequently brings with it some degree of recovery of the impaired sensory avenues and of the motor abilities of the patient.

Summary

Prognosis would seem good for young aphasic patients whose disturbances are associated with traumatic causes, who have or had outgoing personalities, for whom a training program is started early, and who have a modest aspiration level. Prognosis appears less hopeful for older patients, for those for whom training is delayed, for those who have persistent euphoria, for patients whose personality picture reveals rigidity or psychopathic tendencies, and for those patients who develop great dependency on their clinicians.

References

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2. *Veterans Administration Technical Bulletin*, TB 10A-42, April 29, 1947.

Letter to the Editor

I AM glad that Wendell Johnson wrote the letter which appeared in the June issue of the *Journal*. It represents a matter of serious concern to all of us in the field of speech and hearing disorders. Certainly we regret deeply the consequences of that speech therapist's professional behavior and feel impelled to search for explanations of such behavior in a (presumably) certified member of our field. That state programs of speech correction, by their reimbursement policies, appear to condone, or even require these practices, seems only to point up the probable extensiveness of such practices, not to serve as an explanation for them. State programs do not lead, they follow the philosophy currently held by members of a particular field.

It seems evident that here is a particular instance of a situation for which we must all share responsibility. If we do not sanction it, we should seek to discover why it exists. In this letter I should like to point out some of the basic issues which seem to me to be involved.

Two assumptions are made in the story quoted: (1) the speech therapist should have 'visited the home and treated the causes there'; (2) 'the mere attendance (in such special group classes), even if the word "stutter" is never used there (is) sufficient to create most unfortunate disturbances.'

It is largely agreed that since the child's problem of stuttering involves difficulties in perceptions of interpersonal relationships, the treatment of such difficulties must involve *corrective experience* in the area of such relationships. This means, in terms of assumption one, that the goal of the therapist consists in getting the parents to behave differently with the child, i. e., a process of *doing* on their part; and that her instrument for moving toward this goal, viz., parent conferences, consists of *talking about* the doing. She will undoubtedly want to talk about such changes as: not labelling the child, ignoring speech symptoms, stressing positive aspects of speech, removing pressures, changing authority relationships, etc. In terms of assumption two, however, it is admitted that the speech therapist, in her process of doing with the child, i. e., in the interpersonal relationship called speech therapy, produces only traumatic results, let alone providing any corrective experience in changing his perceptions of interpersonal relationships. One wonders how effectively such a speech therapist can deal with parents through talking about a process which she herself is unable to translate into doing.

It appears then that we should investigate the structure of the special group classes which have given rise to assumption two: discover what it is that 'creates unfortunate disturbances'; determine whether this must reside inherently in such classes or whether it can be changed; and if so, how.

The incident quoted touched upon an important point (perhaps unwittingly) when it stated, 'Even if the word "stutter" is never used there...' The mere verbal avoidance of the label 'stutterer,' for example, by no means eliminates from our behavior the effects of our hidden assumptions regarding classification. We have emphasized to our students that they should not label a client as a 'stutterer,' yet we have built our body of knowledge in this field on the basis of such classification. Worse yet, we have

built our therapeutic procedures on it, with the derived assumption that each different class of speech disorders requires a different kind of therapy. Frequently we segregate children for speech classes: one for those with stuttering symptoms, another for those with symptoms resulting from cleft palate, etc. Such *behavior* by the therapist constitutes far more potent labelling than would the mere use of a label in her speech. Or frequently, children with different varieties of speech symptoms are put together in one class because of pressures of large numbers in public school clinics; yet here, too, with the therapist still oriented to different procedures for different kinds of defects, her behavior still constitutes a labelling process, with the possibility of results described in the incident quoted.

Our hidden assumptions regarding classification have resulted in another derived assumption, one relating to our definition of speech. While we frequently assert on verbal levels that the process called 'speech' refers to an aspect of behavior in interpersonal relationships, in actual clinical practice we behave by and large as if 'speech' were functionally equivalent to the mechanics of sound production. Materials for 'such special classes' consist widely of nonsense syllables, word lists, drill sentences and so-called speech games, but for the practice they afford in sound production, or for something called 'motivation,' not for facilitating more desirable behavior in use of speech in interpersonal relationships. (Of course, one might even use conversation patterns as material but still keep the procedure oriented solely to 'drill.') Public speaking situations are sometimes used near the end of programs of treatment, but again chiefly for 'drill' on sound production. With such procedures we are doing what we tell parents they must avoid with the child who stutters, viz., stressing largely negative features of speech.

And let us not assume that the traumatic effects of such instruction occur only in children who stutter. The mere absence of stuttering in children who do not stutter does not preclude the possibility in them of distorted perceptions, inner pressures, tensions, etc. During the past seven years of doing research in group therapy and of supervising the daily teaching of student-therapists, I have observed such effects with increasing frequency in clients with other types of speech disorders. And as I have become progressively free from the restrictive effect on observation of the labels 'functional' and 'structural' used as class concepts, it has seemed clear (1) that certain symptoms of behavior must be attributed to poor clinical teaching, and (2) that most if not all clients have need for corrective 'emotional' experience in therapy.

Let us investigate, then, the possibility of modifying the structure of group classes in speech therapy. If we operate on the basic assumption that speech represents an aspect of behavior in interpersonal relationships, then we become concerned right from the first with positive aspects—with people rather than with mere symptoms of disorder: with a real situation, with participating (doing, speaking, listening), with establishing a sense of belongingness, creating a wish to communicate, recognizing that each one has already some desirable characteristics of speaking behavior, modifying perceptions and building self-confidence in various interpersonal relationships, increasing skill in role-taking, developing unemotional evaluation of behavior, etc. Such an orientation opens up possibilities for providing corrective, rather than traumatic, experience. It does not impede, but rather facilitates whatever work is needed in the aspect of mechanics of sound production, since use of speech in interpersonal relationships constitutes a larger frame of reference,

within which mechanical features are included. It is quite possible to be moving toward several different goals for a particular child or for different children right within the same class period. But such teaching requires more than just having numbers of children assembled together in a classroom; it requires that a *group structure* be built, and that that structure be manipulated by the therapist to serve therapeutic ends.

Within such a program, the speech therapist does not make decisions about membership in speech class on the basis of type of speech disorder, but rather on the basis of the pattern of needs of the particular child as well as of his parents. She no longer tries to separate therapeutic procedures into the dichotomies of parent conferences *or* speech classes, but rather builds a clinical program which includes instruction for parents as well as children. Then she can *show* parents how to change behavior with the child, rather than merely talk about it.

But speech therapists cannot create and use such a group structure unless their professional training has prepared them for it. The basic assumptions underlying therapy are different; the goals are more inclusive; the procedures require greater skill in teaching. Let us grant that we know very little as yet about the dynamics of such clinical teaching. Nevertheless, one thing seems clear: we must abandon the assumption on which our teacher training programs have been based, viz., that a body of knowledge for therapy consists only of an aggregate of 'techniques' for this or that type of speech disorder, that a student who has merely mastered such techniques is thereby qualified to engage in professional practice. What we need is not more 'techniques,' not more 'methods,' not 'systems' of therapy; but rather the cooperative effort of workers in the field to build a *theoretical structure* for speech therapy. Such a theoretical structure should have a scientific base in common with other fields dealing in human relations, founded upon the dynamics of human behavior, of which speech is one aspect. The building of such a theoretical structure for therapy needs to be recognized as having enough importance that it will call forth our best efforts in teaching (both in therapy and in teacher-training), stimulate further research in these areas, and make funds available for such research.

—Ollie Backus

Book Reviews

(Editor's note: The following composite review was done by Dr. Zarling by special request in the hope that it would serve as an orientation for speech pathologists in contemporary thinking about aphasia. E.H.H.)

The literature in the field of aphasia is probably the most confused of all scientific literature. In no other field is the individual opinion more revered and unanimity of philosophy more abhorred. Orientation toward the aphasic phenomena has generally been based on anatomico-physiological or upon psychological concepts. These have differed widely and few have had the courage to attempt to survey the field and to succeed in at least reducing some of the confusion and controversy.

The three books reviewed here have appeared since 1930 and represent the current major trends in the philosophy of language disorders.

GOLDSTEIN, KURT. *Language and Language Disturbances.* New York: Grune & Stratton, 1948. Pp. 374.

This book is an attempt at a comprehensive summary of the subject of aphasia, based on an 'organismic' philosophy of language. This is, essentially, that every individual speech performance is understandable only from the aspect of its relation to the function of the total organism in its endeavor to realize itself as much as possible in the given situation. The author's purpose is to 'present those speech disturbances observed in lesions of the brain cortex in a form useful for practical and theoretical purposes in the clinic.'

The symptoms seen in each aphasia patient are observed in an attempt to determine the origin of the symptoms, and leading to the differentiation of four groups: (1) Symptoms representing direct sequela of the impairment of the substratum. They are defects of performance—the negative symptoms of Hughlings Jackson; (2) symptoms due to the effect of separation of an undamaged area from a damaged one. These are considered to be indirect or isolation symptoms. They are Jackson's positive symptoms; (3) symptoms due to the effect which the pathologic process in the damaged area exerts on other parts of the nervous system. These are the secondary or depending symptoms; (4) symptoms which represent protective mechanisms against the effect of the defect on the total personality. They serve to avoid 'catastrophic conditions.'

The organismic approach to aphasic phenomena is discussed and reinforced with selected literature as applying to the philosophic tenets of the organismic theories. There are numerous suggestions for research in normal language processes which would serve to explain the phenomena seen in any disturbance of the language process. The author believes the anatomico-physiological orientations to be limited in scope and practical application and believes the psychological approach to be most productive and to have the greatest future promise.

Again in the light of the author's philosophy of language, the various forms of disturbances of language in cerebral pathology are surveyed. From this survey, another system of nomenclature is presented. The purpose of the new system is to allow clear characterization of the various symptom complexes so that the names can be used for comparison and correlation. The basis of the terms is anatomic, psychologic and clinical impression, however, and does not seem less unwieldly than previous systems from other philosophical disciplines. The nomenclature proposed differentiates the disturbances of language due to disturbances of instrumentalities involving concrete language, expression and reception, and those due to impairment of abstract attitude and other non-language mental phenomena, according to the author.

The examination of the patient is given in an excellent section, and the specific test procedures are related to the author's theories and system of nomenclature. This section is certainly one of the best in the book.

The latter half of the book is given over chiefly to detailed case reports which support the author's concepts of aphasia.

The brief section on treatment of the patient is again the result of extensive experience and reflects a current trend toward optimism in the therapy of the aphasic patient.

This book represents the psychologic organismic approach to the explanation of

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phenomena seen in the aphasic patient. This would certainly seem to be a fruitful and fascinating field of research in aphasia and the book will most likely come to be a landmark in future studies.

The book is extremely difficult to read, however, and there are disturbing numerical parenthetical references to the bibliography or previously discussed materials. These serve chiefly to increase the reader's difficulties. At least a minimum background in the organismic approach to biology and sociology would seem imperative. Though this book should have wide diffusion it is likely to be limited by its inherent difficulties of mental digestion and assimilation on the part of the reader. It is doubtful if the author entirely achieved his preface purpose.

WEISENBURG, THEODORE H. and MCBRIDE, KATHARINE E. *Aphasia.* New York: Commonwealth Fund, 1935. Pp. 623.

The enormous amount of literature and the proportional amount of diverse and conflicting evidence for various theories for the explanation of the disturbance of language known as aphasia caused the authors to attempt to bring some order out of chaos by studying a group of patients with language disorders by means of tested psychological tools.

From a survey of early and modern literature, the works of J. Hughlings Jackson and H. Head were selected as philosophies of language which would guide the author's investigations. They specified adherence to Jackson's doctrine that the aphasic symptoms are the result of the activity of the uninjured portions of the brain, because dead tissue cannot produce kinetic phenomena. The task of the investigation then was to seek an adequate method of delimiting the extent of the remaining performances in language and non-language activity.

Four objectives were established for the study: (1) the establishment of a battery of tests satisfactory for the discrimination and analysis of aphasic disorders; (2) the study of psychological changes in aphasia; (3) the classification of types of aphasia; and (4) the study of the nature and location of the lesions present in the brain of the patient with an aphasic language disorder.

The sample selected for study is well chosen within specific limits relative to age and concomittant disease or degenerative process. A group of 60 aphasic patients; 22 patients with a unilateral lesion without aphasia; and a control group of 85 'normal' adults were studied and compared. This represents the largest control group yet studied.

As the aphasic patients were studied, the group was empirically divided into four large classes: (1) The predominantly expressive where the most serious disturbances were in expression in speech and writing; (2) the predominantly receptive where receptive processes suffered more than the expressive, and there were serious limitations in the understanding of spoken language or printed material, with some changes in speaking and writing, chiefly verbal and grammatical confusions; (3) the expressive-receptive group in which all language functions are severely and more or less equally limited; and (4) the amnesic group, in which the difficulties are similar to the expressive disorder, but result chiefly from inability to evoke the necessary words as names for objects, conditions or qualities, receptive functions being relatively satisfactory.

The tests used were devices covering speaking, naming, repeating, understanding of spoken language, reading, writing, arithmetic, language intelligence, reproduction of verbal material and various non-language tests. These tests had for the most part proved useful, according to the author, for mental and educational examinations of children. The results for the aphasic patients were not interpreted on the basis of the known results for children, but on the basis of performance of a comparable group of adults chosen and examined for this particular purpose.

Extensive case studies are related in detail. From these examinations the conclusions are that there is as yet no adequate explanation of psychological phenomena seen in aphasia. The aphasic shows a characteristic deterioration, with language processes more seriously affected and with slighter changes in non-language and social performances.

In regard to localization of lesions, the conclusion is that only a unilateral cerebral lesion on the dominant hemisphere can produce disturbances of language. The non-dominant hemisphere is concerned with normal language function only in a minor degree. Localization with respect to the empirical clinical groups gave no decisive evidence. The authors conclude, 'Every lesion which causes aphasia produces a negative and positive aspect. The negative is the result of the lesion and is responsible for what the patient cannot do. The positive, or what language and behavior the patient is capable of, is the result of the functioning of the uninjured brain. Such physiological activity is a live dynamic process and cannot be measured. That is why localization of language and its disturbances is impossible.'

The authors feel that their contributions

lie in the establishment of a satisfactory system of examination for dealing with the practical problems of diagnosis and treatment in aphasia; the comparable study of 'normal' and aphasic adults and the more accurate determinations of the aphasic disorder consequent thereon; the devising of a simple and practical system of classification, adaptable to all doctrines; and various observations on the course of the disorder and practical suggestions for the reeducation of aphasic patients.

The study undertaken represents an immense amount of work. The test battery is, however, unwieldy and of little practical use in clinical neurological wards. It is of interest for testing the limits of the aphasic disorder and attempting further explanations of the nature of the disorder. The state of the cerebrum is also a dynamic situation, however, and it is difficult to compare test results over prolonged periods of time without knowledge of the shifting anatomical and physiological states of the substratum. The element of fatigue in such a large test battery is also open to question. The comparison of aphasic and normal groups is of value and deserves further study. The classification is perhaps adequate for a causal diagnosis but is pessimistic and too convenient where one must think of specific therapy or use the symptom as a tool for localizing the cerebral lesion. The area of function between the receptive and expressive phenomena, where concepts are synthesized, is ignored in this classification. The minimal disturbances, which necessitate comparison with the 'normal' group, would seem to fall in this area. The short shrift given to cerebral localization reflects a rather extreme psychological orientation with a determined omission of pathological studies. This is most likely due, however, to the limited autopsy material available in this series and the resultant necessity for conjectures concerning the distinct anatomical damage.

NIELSEN, J. M. *Agnosia, Apraxia, Aphasia.* New York: Paul B. Hoeber, Inc., 1944. Pp. 286.

This little book represents the anatominco-physiological approach to the problem of aphasia. The author believes that this type of approach has been prematurely discarded in recent years in favor of the psychological approach. The book is a philosophy of aphasia based on anatomico-physiological observations on cases from neurological literature and the large number of cases seen personally by the author.

The first portion of the book is concerned with a historical review of the work done by various anatomists and physiologists to explain the phenomena seen in aphasic patients and to localize within anatomical 'centers' the varied aspects of language.

The work of Potzl and Henschen is cited particularly as the foundations for the investigations in this book. Aphasia is defined to consist of organic disease of the cerebral memory engrams for language. Thus aphasia includes those agnosias and apraxias which have to do with the language. Aphasia is chiefly a disturbance of cerebral associative mechanisms.

As to orientation, the author states that when he 'decided to approach this problem [aphasia] from the standpoint of cerebral localization, it was not with the idea of ignoring psychology, but while taking it into full account to stress anatomy and physiology.'

The author discusses his system of nomenclature of the phenomena seen in patients with a language defect. This results in a division of the various symptoms into signs of agnosia, apraxia, and aphasia, which though not being new terms, do have modified definitions as compared to their original application. Agnosia deals chiefly with the defects of reception and recognition in the centripetal sensory systems, and apraxia with the projection system as related to language functions. Various nonlanguage dysfunctions are also considered to be on an apractic basis.

A further concept which is elaborated is the extent of function of the so-called minor hemisphere in language in contrast to the unity of cerebral function of the psychological approach. The author feels that he has sufficient clinical proof of minor hemisphere function to explain the inconsistencies in language function after known pathological alterations in specific areas, which has been one of the chief objections of the psychologically oriented investigator.

There is also included a section on disturbances of the body scheme and the associated cerebral lesions.

The basic principle governing the examination of the patient for agnosia, apraxia, and aphasia which is followed by the author is to work from the simple to the complex, i.e., from agnosia to apraxia to aphasia. The methods of examination listed for each of these phenomena are described in a general way. There is no attempt to determine the extent of the disturbance, but merely to determine the presence or absence of the disturbance. It is the ingenuity and perspicacity of the examiner which is most essential in examining the patients. The evidence presented from the author's viewpoint is based on

cases from the literature, particularly from Henschen's monograph and from the cases seen by the author. The case reports are extensive and are interpreted in the light of the author's philosophy of aphasia. The validity of the conclusions will depend upon the reader's orientation, but the pathological studies provide a more objective measurement than is seen in other studies on aphasia. The last portion of the book is concerned with an epitome of the author's system of the nomenclature and philosophy of aphasia, and suggestions for standardization of nomenclature. This book provides a more conformable approach to the problem of aphasia for the clinical neurologist who is oriented to anatomical and physiological investigations of cerebral function. The systemic method of examination would seem to provide a technique for further study. There is less confusion of anatomical, physiological, and psychological concepts in this book than is usually found in the literature. It would be helpful if the methods of examination were a bit more standardized in detail.

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These three books represent widely differing views in the field of investigation of the aphasic patient. The three types of approach to aphasic phenomena, the anatomic, physiologic, and psychologic, are represented. Particularly in the psychologic approaches there seems to be a confusion of terminology of each of these chains of thought which makes reading difficult and the conclusions not entirely valid. A standardization of nomenclature is still to be sought after, one which does not permit confusion of concepts obtained from the three varying avenues of approach to the understanding of aphasic phenomena. Only when this occurs will we be able to compare and objectively evaluate the various studies. Perhaps present day advances in neuro-anatomy, neuro-physiology, and psychologic measurement will bridge the gap between the yet widely separated philosophies.

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GROVES, ERNEST R. and GROVES, GLADYS H. *The Contemporary American Family*. New York: J. B. Lippincott, 1947. Pp. xii+838.

This textbook is intended for college level courses devoted to the study of the American family. It is the authors' principal purpose to deal systematically with materials which they believe are essential to an understanding of the present day American family. The authors hope that such an understanding will render the student more proficient in handling the difficulties and problems that may arise in courtship, conjugal and parenthood situations. The successful adjustment to experiences created by courtship and marriage is based upon a knowledge of the demands made upon individuals involved in such relationships. It is this essential knowledge and insight that the book attempts to provide.

The book contains four parts. The first part is devoted to the examination of the factors which have contributed to the development of the present day American family. The major portion of the discussion in this part is intended to place the contemporary American family in its proper developmental perspective. In this part too, will be found some attention paid to variability in marriage and family behavior. In short, this part of the book stays well within the conventional limits that circumscribe what is generally conceived to be a proper introduction to the study of the family.

Psychological, emotional and behavioral phases of family life are presented in the second part. In general, attention is centered upon the psychological mechanisms of the individual manifested in response to a variety of familial situations. Both normal and abnormal individual reaction to varying family patterns are presented and to make the discussion concretely meaningful the presentation is interspersed with a number of abbreviated case histories. Readers unfamiliar with the elementary principles of psychology and personality development should find the materials contained in this part of the book instructive. Those who possess such knowledge, it is believed, will find the discussion rather bland. There is nothing new or arresting in this section for psychologists or sociologists.

Part Three deals with several problems with plague the modern American family. Such topics as divorce, desertion, the arrested family (childless) and the incompatible family are treated in a conventional fashion.

In Part Four will be found an exposition of a number of remedial measures suggested by various specialized approaches to the problems of family life. These measures designed to conserve the American family have come from a number of disciplines and professions. Law, biology, medicine, education, home economics and mental hygiene have all contributed their part to such conservation programs. These remedies are evaluated and the actual and possible consequences which do or may develop from their implementation are indicated.

The Contemporary American Family does not depart in any significant fashion from the paths followed by most of the first rank textbooks in this field of study. Nor should any radical deviation be expected since the senior author of the book (Ernest R. Grove) wrote the first textbook (1927) for college courses in the American family, thus setting a pattern which in general has been followed by others. It should also be noted that the present book is a rewritten and reset edition of the authors' *The American Family* of 1934.

The beginning student as well as the general reader will, it is believed, find the book instructive. The specialists who deal with marriage problems and the by-products of marital discord will find little in it that they do not already know. The authors, however, clearly state that their book is addressed to the college student.

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HEINER, MARIE HAYS. *Hearing is Believing.* Cleveland: World Publishing Co., 1949. Pp. 126.

Almost 20 years ago a book appeared in the field of Speech Pathology entitled *Because I Stutter,* by Wendell Johnson. In the ensuing years, that book has been read with profit by many hundreds of speech correctionists and by just as many stutterers. It presents the problem as only a stutterer himself could present it—from the inside looking out.

In January of this year a book appeared in the related field of hearing entitled *Hearing is Believing,* by Marie Hays Heiner, that in the years to come will serve a comparable purpose. It was written by a hard-of-hearing woman from the inside looking out. It can be read with considerable profit by practicing audiologists and speech pathologists and by people who themselves suffer from a hearing impairment.

The author became hard-of-hearing as the result of influenza during her second year in college. She recounts in the first half of the book her struggle against the acknowledgement that she had a handicapping hearing loss. She describes in some detail how she finally allowed herself to be persuaded to take lip reading lessons; how she kept the lessons a secret from everyone; and how she wandered around in a sea of confusion because the person presenting the lip reading lessons was the purveyor of a method rather than a clinician. It is this sort of thing that those working with hard of hearing adults would do well to read.

In the second half of the book the author tells about how she at last learned the wisdom of calling a spade a spade. She bought a hearing aid and learned, with no small struggle, to wear it. She became acquainted with the work being done for the hard-of-hearing at Garfield House in Cleveland, where she makes her home. She describes how Garfield House became the present Cleveland Speech and Hearing Center.

The thread running through the entire book is the wisdom of the objective point of view. The author feels that much can be done to help the hard-of-hearing person if he himself will: (1) acknowledge his problem, and (2) having been given therapeutic aid, go on to help himself.

Mrs. Heiner makes a comment concerning the speech of the congenitally deaf that seems worthy of quotation: 'Those who have the most difficult task are those who have never heard a sound. . . . The harsh sounds such people make must be understood by the normal hearing as the sounds of high courage.'

This is not in any sense a profound bit of writing. It can be read in a couple of hours. But in the opinion of this reviewer it is a book that should be included on bibliographies of required reading for students who plan to work with the hard-of-hearing and should frequently be suggested to people who themselves suffer from hearing impairment.

JACQUELINE KEASTER
State University of Iowa

KANNER, LEO. *Child Psychiatry* (Second Edition). Springfield, Illinois: Charles C. Thomas, 1948. Pp. 752.

Since the publication of the first edition in 1935, *Child Psychiatry* has been a standard work for pediatricians, psychologists and others interested in the problem behavior of children. The enlarged second edition is rewritten to include much new material, and is reorganized to delineate the field systematically in an even more functional manner. One of the few negative criticisms of the earlier edition was the technical vocabulary which was often unfamiliar to users of the book. The second edition has been made more readable by defining words which are essential to understanding in the section of the book where the definitions are most useful. In many instances the vocabulary has been simplified. For example, two chapters which appear as 'Anergastic Reaction Forms' and 'Dysergastic Reaction Forms' in the first edition have been retitled 'Anomolies, Diseases, and Injuries of the Brain' and 'Transient Cerebral Affections' in the second edition. This simplification of vocabu-

lary makes the book more useful for parents, teachers, and laymen interested in problem behavior of children.

The book is divided into four parts: a brief history of child psychiatry; a basic orientation toward the field; some clinicial considerations; and the phenomenology of problem behavior. Although the entire book has been rewritten, the most obvious changes are found in the first three sections. The history of child psychiatry, new to this edition, succinctly points up the characteristics of the origin and progress of the field. Cultural trends such as the rise of psychometry, juvenile courts and the mental hygiene movement which were favorable for the psychiatric consideration of children characterize the first decade of growth; the growth of special classes, probation, organized foster care and other community facilities for the adjustment of problem children characterizes the second decade; the study of family relationships and the constructive work with parents and teachers on behalf of emotionally upset children is characteristic of the third decade; and the inclusion of the child personally in his therapeutic progress is characteristic of the fourth decade.

In the section on basic orientation, the most outstanding change is in the great emphasis upon the importance of 'the attitudes which act upon children and in response to which children develop their own attitudes,' i.e., parental, teacher, physician and group attitudes. Much emphasis is placed upon the role of the parent in providing the kind of environment which is likely to foster the development of problem or non-problem behavior on the part of the child. This emphasis is not limited to a single section of the book, but in case after case, presented throughout the book, work with the parent is described as concurrent with or primary to work with the child. The increase in the use of projective techniques as clinical considerations is recognized in the discussion of dreams, daydreams, imaginary companions, wishes, drawing, modeling, fingerpainting, dramatic play as well as the more familiar projective play techniques.

Essentially the same problems are discussed as in the first edition, but the classification is revised somewhat. Reorganization of the phenomenology of behavior problems into the three basic divisions of personality problems arising from physical illness, psychosomatic problems, and problem behavor is clear-cut, functional, and familiar. The material in this section has been rewritten to include more information. It has been brought up to date by the inclusion of the more recent research on the questions and problems discussed.

The chapter on problems of speech and language is probably of most interest to the readers of this review. Since in 33 pages, speech development, mutism, the late acquisition of speech, stuttering, problems of phonation, articulation, comprehension, and symbolization, and the field of speech correction are presented, of necessity the material is largely descriptive. The need for speech correction and the philosophy of the field is sympathetically presented. The most frequent types of articulatory difficulities and their probable causes are presented. Stuttering is most adequately discussed. In this area alone, is treatment discussed at any length. The bibliography for this section includes 38 references with publication dates between 1862 and 1947, as compared with only 14 references for all other speech disorders. In the light of the needs of the readers of this book, however, this is probably a satisfactory allotment of space. In the history of the development of speech, emphasis is placed on the early classic works of Gesell and McCarthy, while some of the more recent contributors in this field, such as Irwin, are ignored. The pediatric interest of the author is evident in references to the recent work on crying of infants by Aldrich and his accociates in the Rochester Child Health Project.

Dr. Kanner is associate professor of psychiatry and pediatrics and Director of Children's Psychiatric Service at The Johns Hopkins University. The materials in this book are the result of clinical experience, contacts with pediatricians, and familiarity with the literature in the field. It is an excellent guide to the behavior problems of children; it emphasizes the importance of studying the causes of behavior; and it presents a philosophy which contributes to the better understanding of child behavior. It is a useful reference and text for parents, physicians, teachers, social workers and others who deal professionally with children.

MILDRED C. TEMPLIN
University of Minnesota

STRAUSS, ALFRED A. and LEHTINEN, LAURA E. *Psychopathology and Education of the Brain-Injured Child.* New York: Grune and Stratton, 1947. Pp. 200.

Some books deal directly with the speech defective and his problems. Their significance for the speech pathologist is obvious. Other books, although they may direct little attention to speech deviations as such, are concerned with problems or groups of people which should be of prime concern to the speech correctionist. *Psychopathology and Education of the Brain-Injured Child* falls in the second group. 'This book deals with those children, physically handicapped

or physically sound, who show intellectual and personality aberrations as a result of injury to the brain substance.' Speech problems of such children are given very little direct consideration, although the authors are cognizant of the need for speech rehabilitation. 'Speech training is a necessity for many brain-injured children and should be taken over by specialists in the field who are well aware of the problem and can offer specialized techniques for correction.'

This book is divided into two main parts. Part I, 'Psychopathology,' opens with an historical review of the problem and a brief discussion of the anatomy of the brain and its functions. This is followed by three chapters which discuss disorders—perception and perceptual, thinking, and behavior—of the brain-injured child. Chapters VI and VII present methods of testing and diagnosis. Part I closes with a comparison of the exogenous and endogenous child and an analysis of problems which differences between these types present.

Part II, Education, discusses general problems relating to the education of the brain-injured child and includes individual chapters devoted to the teaching of arithmetic, reading, and writing. The book closes with a case presentation based on a five-year study of a brain-injured deaf boy.

This book offers a nice balance of discussion of principles, studies done in the area, case analyses, and specific suggestions for remedial work. As stated, the remedial materials relate to speech only indirectly. A chapter on language of brain-injured children which, as stated by Mr. Strauss in correspondence with this reviewer, was prepared by the authors, was omitted 'due to the publisher's wish to shorten the book.' Obviously, it is impossible to evaluate specifically how much such a chapter would have increased the value of this book to speech pathologists. Judging by the rest of the book such a chapter would have been very valuable.

Evaluating this book by what it includes, rather than by what it omits, this reviewer believes that it will prove of great value to anyone who works with children. It should prove of special value to those who, like the speech pathologist, work with children in whom there is some evidence of abnormality.

ERNEST H. HENRIKSON
University of Minnesota

WISE, CLAUDE M. and MORGAN, LUCIA. *A Progressive Phonetic Workbook*. St. Louis: Planographed by John S. Swift Co., 1948. Pp. 68.

This book is a tool for acquainting students with the IPA and some variants of American pronunciation. Phonetics is vital to the study of speech and foreign languages, and some branches of anthropology, physics, psychology, etc. Phonetics has to be learned by students of these subjects and is frequently learned with some difficulty. Thus a tool for students is in order. This particular one is adequate. It systematizes speech sounds well, amply exemplifies each, and defines the categories into which the sounds fall. It also describes some of the usual accompaniments of the sounds, e.g., spelling and distinctive placement of the vocal organs. As exercises, approximately 30 words are offered for transcription into phonetic symbols in connection with each sound of English. The workbook can be useful in either a brief course in phonetics or as a running part of a course in beginning speech.

The teacher will have to find elsewhere passages for oral reading from phonetic script. Some teachers may question the marriage of convenience of phonetics and American pronunciation. 'Correctness' of the latter, within the limits of regional variations, is postulated as a reason for producing the book and for studying phonetics. Finally, in this slightly critical paragraph, the basis for calling the outline of study *progressive* is not clear. These statements do not detract from the usefulness of the workbook in helping students learn phonetics.

JOHN W. BLACK
Kenyon College

Abstracts

JOHNSON, W. Speech and personality. *ETC.*, 1949, 6, 84-102.

The general theme of this discussion is that speech frustration leads, in many instances, to the development of personality difficulties. Dr. Johnson discusses the stages in the process of communication and points out the common speech and voice defects that may result from interference with this process.

When the processes of abstracting, evaluating, and reporting essential to speech are distorted and frustrated, personality, however defined, is correspondingly affected. The relationship between speech and personality is so close, Johnson indicates, that the two terms can hardly be disentangled. He concludes that speech is not only the evidence of personality, but it is also probably the chief means by which it is molded. *(C. G. W.)*

CHAPIN, A. B. When a school child stutters. *Nat. Par. Teach.*, 1949, 43, (8), 14-16.

Anything in the home or school situation that increases tension and pressure on the child is likely to aggravate his stuttering. Teachers and parents should operate as a team on a method of building up the child's confidence and reducing tensions. Suggestions are given for parents and teachers in terms of do's and don'ts in handling the child's problem. *(K. S. W.)*

MEYERSON, L. (editor). The social psychology of physical disability. *J. soc. Iss.*, 1948, 4, Fall issue.

The entire issue of this journal for Fall, 1948, is devoted to the social psychology of physical disability. Ronald Lippert, general editor of the journal, says, 'This issue . . . is an outstanding contribution to the library, the thinking, and the action of social psychologists and clinical psychologists; of those educators and social welfare practitioners who work professionally with groups of physicallv disabled; of every citizen who accepts the responsibility of interacting intelligently with fellow citizens who have some disability; and of those with some physical disability who wish to gain perspective and insight through careful analysis of that large population to which they "belong".'

The following articles appear in the issue:

Physical Disability as a Social Psychological Problem

The Physically Handicapped in Certain Non-occidental Societies

Physical Disability, Mental Conflict and Social Crisis

The Social Psychology of Physical Disability

The Socio-psychological Dynamics of Physical Disability: A Review of the Adlerian Concept

Social Acceptance of the Injured

Personality Crippling through Physical Disability

Experimental Injury: An Approach to the Dynamics of Physical Disability

Rigidity in the Deaf and Blind

The Impact of Physical Disability on Social Adjustment

Body Image Problems of the Brain Damaged Child

The Disabled Child in School

General Semantics and Physical Disability

Employment for the Disabled.

A Fair Employment Act for the Disabled

Social Action for the Disabled.

(C. G. W.)

BICE, H. and HOLDEN, M. Group counseling with mothers of children with cerebral palsy. *J. soc. Casewk.*, 1949, 30, 104-109.

This article is a description of group work with mothers of cerebral palsied children, telling of the topics discussed with

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Abstracts is edited by Eugene T. McDonald, Pennsylvania State College, assisted by the following committee: Jack L. Bangs, University of Washington; Leo G. Doerfler, University of Pittsburgh; Charles R. Elliott, Pennsylvania State College; William G. Hardy, Johns Hopkins University; Charlotte G. Wells, University of Missouri; Harry S. Wise, U. S. Marine Hospital, Norfolk, Va.; and Kenneth Scott Wood, University of Oregon. The committee systematically reviews 152 journals for articles of interest to members of ASHA. Students and other members are encouraged to submit abstracts. Directions for preparing abstracts may be obtained from the abstracts editor.

the mothers and of the benefits thought to be derived from a group counseling situation.

Six periods of discussion with groups of 10 mothers gave opportunity for discussion of individual questions, exchange of information on managing the cerebral palsied child, presentation of the parents' needs for clear information from professional workers, and consideration of problems faced by the parents of cerebral palsied children. The mothers discussed their emotional conflicts and their mutual difficulties and felt that they gained from the conferences. *(C. G. W.)*

PUSITZ, M. E. Therapy for parents. *Spastic Rev.*, 1949, 10 (1), 4-6, 13, 15; (2), 10-12, 14-15.

In these two installments the author writes directly to the parents of the cerebral palsied child concerning the attitudes they must take in adjusting to their child's affliction. An analysis of parental reactions to a spastic child is given.

Parents must have a proper understanding of what is wrong with the child; they should refrain from discussing his condition with people who know nothing about it; and they should accept the dictum that treatment will be needed for many years with slow progress expected. Specialists should be sought out to handle each phase of the child's training except that which can be carried on at home.

The whole objective is to try to get the child to adapt himself to his environment by centering much of the training in the home under parental direction and in the local school if possible. It is the parents' job to secure the proper medical specialist, speech correctionist, teachers and schooling. Parents must know themselves and face reality with courage. *(K. S. W.)*

SHERE, M. O. Let Raggedy-Ann teach your child to talk. *Crippled Child*, 1949, 26 (5), 14-15, 30.

The use of dolls is described in teaching spastic children to talk. The suggestions are specific in terms of what is said to the child in teaching him, by means of a multi-sensory approach, to relax, to obey, to listen, and to be aware of his surroundings. *(K. S. W.)*

BOSLEY, E. Teaching the cerebral palsied to chew. *Spastic Rev.*, 1949, 10, 7-9, 20.

In speech development for the cerebral palsied the importance of teaching him to chew cannot be overestimated. The skills needed to develop more useful functioning of the tongue, lips and jaw are highly technical and should be carried out by a trained person. The author discusses common faults in jaw and tongue movements with suggestions for teaching and motivating mastication. *(K. S. W.)*

KISKADDEN, W., SCHECHTMAN, A. and BROCK, C. Theories of the etiology of congenital deformities. *Int. Abstr. Surg.*, 1949, 88, 1-14.

One of the most pressing problems confronting the speech clinician is how to explain the causes of congenital defects to parents of abnormal children. Since one child in 132 will be born with an anatomical defect and a high proportion of these will be of the organs of speech and hearing, it is imperative that the therapist have the most accurate information at his finger tips. This collective review of 145 recent studies on congenital deformities gives just such clear and conservative information on these problems as they are produced by environmental, genetic, glandular, embryological, infective and special conditions. *(H. S. W.)*

WESSELHOEFT, C. Rubella (German measles) and congenital deformities. *N. Eng. J. Med.*, 1949, 240, 258-261.

This is a summary report by the author to the Massachusetts Medical Society on the effects of viral infections, specifically the rubella virus, on the pre-natal child. It was concluded that the usual result of maternal infection during pregnancy is miscarriage or delayed abortion. In those cases where a live birth follows, congenital defects are the rule. The writer collected 780 cases for analysis, of whom only 124 children were normal births. The remaining 656 children had one or more of the following congenital defects: 'eye defects (221), deafness (213), heart lesions (221), microcephalic (74), mental retardation (21), dental defects (20), mongolism (3).' *(H. S. W.)*

CASTLEMAN, B. and NORRIS, E. The pathology of the thymus in myasthemia gravis. *Medicine*, 1949, 28, 27-58.

The authors evaluate the role of the thymus in myasthenia gravis—that relatively rare, uniformly fatal, muscular disease of persons between 15 and 25 or 45 to 70, producing severe dyslalia and dysphonia. They base their findings on a statistical analysis of 330 cases and 35 autopsy specimens and conclude that: 'Although the changes in the thymus are the most conspicuous and constant anatomic change in the patient with myasthenia gravis, thymectomy or thymomectomy has not produced dramatic clinical improvement.' *(H. S. W.)*

HARDY, W. G. The relations between impaired hearing and pseudo-feeblemindedness. *Nerv. Child*, 1948, 7, 432-445.

Clinical experience demonstrates that impaired hearing in a child may produce behavior suggestive of feeblemindedness, but when the facts of hearing loss are known and interpreted in terms of language development and psychologic adjustment, the child's 'mindedness' may prove to be within the normal range.

The author discusses the relationship between hearing loss and child development and emphasizes high frequency hearing loss as a factor in psycho-acoustic distortion. The problems of measuring auditory acuity in the young child and differentiating between aphasia and impaired hearing are presented. Three cases of pseudo-feeblemindedness are described.

It is concluded that hearing relates to psycho-social adjustment; that an accurate hearing test is a primary step in diagnosis; that the simple dichotomy of hearing and not-hearing is invalid; that the term pseudo-feeblemindedness applies to the child whose hearing loss is less severe; that hearing loss in the mid- and high-frequency sounds produces far-reaching behavioral effects; and that precise relations between impaired hearing and developmental behavior in the pre-school child should be studied further. *(K. S. W.)*

LEVINE, E. S. Can we speed up the slow child? *Volta Rev.*, 1949, 51, 269-270, 316-318.

Glutamic acid was administered to 6 young (6:10-14:3 years) deaf children with IQ's from 61 to 81 in an attempt to measure any inuflence on mental functioning, personality and alertness. Either the Merrill-Palmer, Pintner-Paterson or Wechsler-Bellevue performance scales were employed for test-retest scores. All subjects showed an increase in IQ, the average increase being 13 points. Test results for each child are given, along with a teacher's evaluation of any behavior change. *(L. G. D.)*

AMOS, M. L. and ROBLEE, D. B. The rehabilitation of persons with impaired hearing. *Hearing News*, 1949, 17, 3-6, 10-14.

This first of two articles emphasizes the fact that physical disabilities, especially those of hearing, are not fixed, but may be minimized or considerably improved. Rehabilitation workers and vocational counselors should be trained to recognize these problems and to render assistance in securing treatment. Hearing tests are described in simple terms and the various types of hearing loss are listed. A Veterans Administration vocational advisement form for the aurally handicapped is reproproduced. *(L. G. D.)*

BARTLETT, R. Attention in speech reading. *Hearing News*, 1949, 17, 1-3, 18-22.

To improve speech reading skill, 'ways must be devised for increasing the attention span through the use of more concrete and more simplified material.' Suggested devices are the use of flash cards with two similar words, still pictures, film strips, use of a tachistoscope, etc., until more abstract material can be assimilated.

(L. G. D.)

LIERLE, D. M. The role of the otolaryngologist with the hard of hearing child. *J. except. Child.*, 1949, 15, 130-133, 154.

The objectives and work of the Committee on the Conservation of Hearing of the American Academy of Ophthalmology and Otolaryngology, which was re-organized in 1942, are reviewed. Several educational projects are cited including films and manuals which are available.

The necessity and general nature of routine testing are discussed, and factors are presented which should be considered by otolaryngologists in the prevention program. The author believes the present day otolaryngologist must take an active part in disseminating information and in promoting the development of complete hearing clinics and conservation programs.

(K. S. W.)

DOERFLER, L. Hearing aid advisement in a hearing society. *Hearing News*, 1949, 17, 1, 14-22.

A four-point program for hearing aid advisement is suggested, including orientation to the problems of hearing loss, assessment of special needs and problems, provision for hearing aid selection, and availability of training. Practical information is given for discovering the special case needing assistance, and a variation of the Deshon Listening Hour is proposed for hearing aid selection. The program will necessarily be altered if a competently staffed audiology clinic is located in the same community. *(L. G. D.)*

FURSTENBERG, A. C. A medic speaks. *Nat. Hearing Aid J.*, 1949, 2, 12-13.

Training in the interpretation of sound is vital in successful use of hearing aids. The aid should always be worn all during the day, and should be worn in the better ear. Air conduction hearing aids are preferable to bone conduction aids, and 'one need not pay too much attention to the audiogram in determining whether or not a hearing aid should be used.' Hearing aids neither improve nor harm auditory function. *(L. G. D.)*

KOBRAK, H. G. The present status of objective hearing tests. *Ann. Otol. Rhinol. and Laryng.*, 1948, 57, 1018-1026.

The classical reflexes for the demonstration of cochlear function are discussed and their shortcomings pointed out. The reflex of the tensor stapedius is recommended, from experience based on work with 40 cases, and the method of observation by direct visualization is presented, together with audiograms demonstrating results. Either the ipselateral or the contralateral ear may be used for presentation of test tones.

The stapedius reflex is a direct response to acoustic stimulation of the cochlea. The number of persons in whom this reflex may be visualized is greater than is usually realized. When the contractions are visible, objective hearing tests may be undertaken to demonstrate cochlear function in children too young for reliable subjective responses, in psychiatric patients and in cases suspected of malingering. *(W. G. H.)*

THURLOW, W. R., DAVIS, H., SILVERMAN, S. R. and WALSH, T. E. Further statistical study of auditory tests in relation to the fenestration operation. *Laryngoscope*, 1949, 59, 113-129.

This continuation of previous studies is based on data from 55 operated ears with regard to test-retest reliability, standard error of measurement, intercorrelation among the tests, and the gains following fenestration. All tests used show good reliability. Auditory Test No. 9 proves to be most reliable and generally satisfactory for the threshold of speech for the patients studied. The Theshold of Intelligibility for Connected Discourse corresponds to the level at which the PB score is 25 per cent. The gain from fenestration estimated by pure-tone audiometry (average of 512, 1024, 2048 and 2896 c.p.s.) is about 5 db less than the gain measured by speech tests.

(W. G. H.)

KOBRACK, H. G. Round window membrane of the cochlea. *Arch. Otolaryng.*, 1949, 49, 36-47.

A series of experiments was designed to study the physical characteristics of the round window membrane and to inquire further into the relation of the round window to the function of hearing. For analysis of physical properties the membrane was removed from the cochlea and set up as an isolated structure supported by bone; a mirror was fastened to the outer surface, so that the excursions could be photographed and calculations made. Elasticity curves were obtained for static pressure and acoustic stimuli. Static and acoustic curves or the membrane in situ in a fresh cadaver are demonstrated, and the asymmetry noted. Contrary to results obtained from study of the isolated specimen, the membrane in situ makes a greater excursion on inward than on outward movement. In the experimental situation the vibrations of the incus are about the same in ossicular and in fenestral (round window membrane) conduction of sound. All experiments with the membrane in situ were conducted with the ossicular chain intact. *(W. G. H.)*

SILVERMAN, S. R. Trends in research and development in problems of deafness. *Hearing News*, 1949, 17, 3-4, 16-22.

Under the headings of (1) medicine and surgery, (2) anatomy and physiology, (3) assessment of hearing impairment, (4) audiometers and hearing aids, (5) educational procedures and (6) psychology, a description is given of the directions in which recent research has been directed. The greatest need at present appears to be research into education and psychology. Emphasis is laid upon the thesis that research need not have immediate practical application to be worthy of public support.

(L. G. D.)

SMITH, K. R. and WEVER, E. G. The problem of stimulation deafness. III. The functional and histological effects of a high-frequency stimulus. *J. exp. Psychol.*, 1949, 39, 238-241.

Ten guinea pig ears were stimulated for four minutes with a 10,000-cycle tone at a sound pressure of 1000 dynes per square centimeter and immediately thereafter the cochlear potentials were redetermined. Following this the ears were examined histologically.

The results show an impairment of cochlear potentials with a definite slope toward increased impairment at higher frequencies. Earlier studies using lower frequencies showed a more generalized loss little related to frequency. The histological study revealed no injury except to one ear where localized injuries to the organ of corti and the tympanic lamella were noted approximately 37 per cent of the way along the basilar membrane from the base.

The authors conclude that their results support the theory that it is the amplitude rather than the intensity of a tone which determines its injurious character.

(J. L. B.)

HARRIS, J. D. and MYERS, C. K. The emergence of a tonal sensation. *J. exp. Psychol.*, 1949, 39, 228-237.

The authors, using two General Radio 913c beat frequency oscillators, and employing a modification of the method of limits, investigated in fine intensity steps the zone

of detectability as experienced by two trained subjects. The zone of detectability is defined as the intensity area between a 50 per cent detection threshold and a 50 per cent pure-tone threshold.

They conclude that the zone of detectability varied from 2.7 to 5.1 db for one S and 1.7 to 3.2 for the other, with a consistent tendency for the zone to be larger in highest frequencies; that at higher frequencies particularly an experienced S can select a certain criterion of tonality and maintain it with considerable precision; that tonal matching indicated there is a gradual emergence of a tonal sensation from an indefinite something to the sharp sensation of a pure tone. *(J. L. B.)*

GOODFRIEND, L. S. Subjective testing of sound reproducing equipment. *J. acoust. Soc. Amer.*, 1949, 21, 81-84.

Previous listener reaction tests are of dubious value since they have not reported or taken into consideration many variables. These include 11 types of distortion, as listed by Olson, program material employed, weather conditions, listener comfort and others. A sample musical program controlling mood progression is suggested, along with a suggested form for recording data on test conditions. *(L. G. D.)*

News and Announcements

Notice

Copies of the March and June, 1944, issues of the *Journal* are needed for the Association archives. Persons who are willing to furnish one or more of these issues should write to the Business Manager, George A. Kopp, Speech Clinic, Wayne University, Detroit, Michigan. The Association will pay for the copies needed and the cost of mailing.

Announcements of Graduate Assistantships

Readers are reminded that News and Announcements is introducing a new section devoted to announcements of graduate assistantships in speech and hearing disorders and speech science available at various universities. This section will be restricted to part-time appointments only; it will not include full-time positions, scholarship grants, or tuition scholarships.

Directors of units and heads of departments are invited to submit listings to the News and Announcements Editor. Information should include formal titles of position, institution, and unit; dates, general duties, and remuneration; name and address of person receiving applications. Copy will be accepted at any time, but the deadline for each issue is two and one-half months prior to the publication date. It is expected that this new section will be of greatest usefulness in the December and March issues, for which the deadlines are September 15 and December 15, respectively.

Governor G. Mennen Williams of Michigan recently signed into law the immediate-effect Bates-Vanderburg bill, which provides a framework for expansion of hearing conservation programs among Michigan school children. The act defines the duties of the state health commissioner relative to hearing conservation programs. It authorizes the health department to maintain approved screening audiometers and necessary supplies and to furnish such equipment, with proper instruction in its use, to local health departments and schools conducting hearing screening tests. Following hearing screening tests with such equipment, the state health commissioner is directed to have administered an individual audiometric test with approved scientific instruments to any child failing such a hearing test. For this purpose he is directed to employ properly trained audiologists, consultants, and other personnel.

Records of individual audiometric tests must be made and continually maintained under existing regulations of the state health commissioner and state council of health. Such records are to be available to physicians, health agencies, and others as permitted by existing regulations, in order to assist in obtaining medical and educational care, attention, and treatment. The state health commissioner is directed to cooperate with all local and state agencies and with local health departments and community groups in obtaining any remedial measures and correctional devices as may be made available for children with hearing impairment.

Actually the state health department has been carrying on such a program in cooperation with local and state agencies since late in 1942, chiefly with federal funds. The present act does not carry a special appropriation, but defines hearing conservation as one of the required health department activities.

At the present time the program's activities, supervised by Courtney D. Osborn, include a health education program in preventing hearing loss; cooperation with local health departments and schools in hearing screening

News and Announcements is edited by Miriam D. Pauls, The Johns Hopkins University.

programs; providing and interpreting individual audiometric tests, with medical referral and educational re-adjustment when needed; giving consultant service to health departments, schools, parents and others concerning the problems and needs of children with hearing loss; and cooperating with other agencies in securing such needs. A central register of children with handicapping hearing loss is maintained and continuous follow-up provided for children not receiving special education or special care. A fund is maintained to assist in purchasing hearing aids for needy children, and for providing instruction for the child in the use of the hearing aid. Two special summer projects are in operation where children not having access to other facilities may receive instruction in the use of a hearing aid.

Dr. S. Richard Silverman, director of Central Institute for the Deaf, spent the month of May in Europe. He had been invited to address the section on Otology of the Royal Society of Medicine; the Institute of Laryngology and Otology of the University of London; England's National Institute for the Deaf; the Dutch Otological Society of Utrecht, Holland; the Karoline Institute in Stockholm; and the University of Zurich, Switzerland. Dr. Silverman's major addresses dealt with the basic concepts of speech testing in audiology.

While in each of the countries, Dr. Silverman had an opportunity to observe the work of a number of outstanding people in related fields and discuss with them varied aspects of their work. Among them were the Ewings of Manchester, England and their pre-school for deaf children; Dr. Hallpike and his peep show technique for testing the hearing of young children; Dr. Cawthorne and his work on Meniere's disease; the vestibular research at Utrecht; the special school for hard of hearing children in Amsterdam, as well as the full-time school for cleft palate children; the Doctors Holmgren in Stockholm and the Karoline Institute, where basic research is being pursued on allergies, recruitment and chemical changes in acoustic trauma; the Nobel Institute; and Dr. Ruedi and his department at the University of Zurich which combines ENT and audiology.

A graduate training program in Audiology and Speech has been established by the Johns Hopkins University in the School of Hygiene and Public Health in close cooperation with the Department of Otolaryngology in the School of Medicine. Specialization in Audiology and Speech may be taken as a principal course of study for the degrees of Doctor of Science in Hygiene and Master of Science in Hygiene. This program is designed to provide advanced training for a limited number of graduate students in the broad field that relates to communicative disorders caused by hearing and speech disabilities. Emphasis is placed upon the relationships among clinical, research, and administrative skills, and special attention is given to the problems of the prevention of deafness, the conservation of hearing, and speech correction in children. The course of study is designed particularly for those preparing for administrative or university teaching positions in Audiology and Speech.

Intensive clinical experience is offered to the student of Audiology and Speech through the facilities of the Hearing and Speech Center, an activity of the Department of Otolaryngology. The facilities for research in Audiology and Speech are University-wide and cover all aspects of problems related to communicative disorders. Of importance to the doctorate student is the program of administrative training in public health enlarged by active field experience, supervised clin-

ical practice, and frequent discussion seminars centered around the work of the county clinics in the state health programs for crippled children, maternal and child care, and mental hygiene.

Course work in audiology and speech is taught by Samuel J. Crowe, M.D., John E. Bordley, M.D., William G. Hardy, Ph.D., Miriam D. Pauls, Ph.D., and Harriet L. Haskins, M.A.

A special intensive adjustment and training course to enable illiterate or unschooled deaf men and women from all parts of the country to earn their own living was held at the Michigan School for the Deaf this past summer. The course was the first of its kind and was under the auspices of the State-Federal partnership of vocational rehabilitation for civilians. Harley Z. Wooden, superintendent of the Michigan School, set up the course for Michigan's Division of Vocational Rehabilitation and the rehabilitation agencies of all other states were invited to send their clients.

Specific objectives of the course were improvement of the deaf person's means of communication, and an understanding of directions, transportation, money, time, personal hygiene, community relations and responsibilities, employer-employee relationships, and basic materials, tools and processes.

Classes in Diagnostic Teaching are being carried on in the Audiology Department of the Pittsburgh Eye and Ear Hospital. Children of pre-school age for whom it has been difficult to establish an accurate diagnosis as to their hearing, mental capacity, speech retardation, etc., are enrolled in one of the classes for varying periods of time, and their behavior observed while specialized teaching techniques are employed. Miss Charlotte Avery, clinical audiologist at the Department, carries on the teaching. Pittsburgh psychologists, otologists and speech correctionists are cooperating in this program, which is supervised by Dr. Leo G. Doerfler, Director of the Department.

The Speech and Hearing Therapy Department of the Johannesburg Hospital, Johannesburg, South Africa, has moved into new and permanent quarters. It is a one-story building situated behind the Children's Hospital which is a unit of the main hospital. The grounds are to be laid out with a sandpit and swings and seats under the trees to make it attractive for patients of all ages. Plans are made for the addition of a soundproof room in which to test patients with hearing disabilities.

A permanent research and demonstration clinic on children's hearing defects and diseases of the ear, financed by the Atkinson Charitable Foundation, will be set up at the new Hospital for Sick Children, Toronto. The clinic is the result of about three years' study by the Foundation staff. The aims of the clinic are:

1. To establish a method by which children with hearing defects may be examined and classified for educational purposes.
2. To demonstrate to trained observers of the board of education the latest and best methods of detecting ear defects among pupils.
3. To conduct research into diseases of the ear in children with the object of arresting hearing retrogression at an early age.
4. To guide parents, school observers and others interested in the selection and application of proper hearing aids.
5. To investigate and to demonstrate for the benefit of the medical profession the most recent and best methods of diagnosing and treating ear defects in children.

Head of the new clinic will be Dr. D. E. S. Wishart, specialist in ailments of the ear and otologist of the Hospital for Sick Children. Dr. Wishart has carried on a small clinic at the hospital on his own for several years. It is planned to have a staff of six for the new clinic, with spacious accommodation, including sound-proof hearing and testing rooms. A special teacher will be selected to aid Dr. Wishart, and will be sent to study at the Ewing Clinic in Manchester.

Toronto, Canada, has had special classes for children with defective speech and hearing since 1922. Since that time the program constantly expanded to meet new needs. In 1947 a pre-school class for deaf children was initiated. Miss Nellie MacDonald and her assistant, Miss Dorothy Greene, are in charge of this program. The usual nursery school training program is carried out. Parents are given help in understanding their child so they can do their share to promote his education.

There are four partially graded oral classes for the deaf at the Clinton School. Miss Anne Aitchison, Mr. C. L. Ellis, Mrs. Marion Morrison, Mr. J. A. Rickaby are the instructors. In four other schools there are classes for the hard-of-hearing taught by Miss Elizabeth Beatty, Miss Barbara Douglas, Miss Mary McAllister and Miss Ruth Miller.

Since February, 1947, a comprehensive hearing conservation program has been in effect. This program is carried out jointly by two therapists and the Department of Public Health. Miss Sadie Henry and Miss Marjorie Phillips are the therapists.

Speech correction classes are held in 35 of the 90 Toronto Public Schools. One or two speech correction classes per week are given each child requiring the service. These teachers also offer lipreading classes. Miss Clara Binnie, Mrs. Marion Craus, Miss Annie MacPherson, Miss Ida Malcom, Miss Margaret Sweetlove, and Miss Tillie White are the correctionists.

The Forty and Eight of the American Legion Post of Portage County, Kent, Ohio, opened its first session of an annual speech camp for speech handicapped boys from nine to 17 years of age this past summer. The camp is located at Twin Lakes, three miles from the campus of Kent State University. The camp activities were serviced by personnel in the field of speech and hearing therapy. Supervising the camp was John R. Montgomery, Director of the Speech and Hearing Clinics at Kent State University. Miss Eleanor L. Gray, Assistant Professor of speech and a supervisor of the Speech and Hearing Clinics at Kent State University, supervised the speech correction activities. This camp provides an opportunity for boys who are speech handicapped to have a full month's vacation where each activity is planned to help the boy with his speech, personality, and other problems in a quiet, friendly atmosphere, conducive to a good program of therapy.

A summer workshop in speech correction was held at the Haven School, Evanston, Illinois, June 27-August 5. This workshop was developed cooperatively by the School of Speech, Northwestern University, the Evanston Public Elementary Schools, and the Illinois State Department of Public Instruction.

Dr. Paul Moore, Associate Professor of Speech Correction, Northwestern, served as the supervisor; Miss Hester Burbridge, Director of Special Education, Evanston Public Schools, served as coordinator; Mrs. Helen Hartshorn, speech correctionist in District 76, Evanston, was the critic teacher.

The workshop offered educational training in public school speech cor-

rection and practice teaching experience to students majoring in speech correction at Northwestern. It aimed at an ideal public school program, emphasizing the total development of the child as related to the specific speech needs. Both group and individual instruction were given. Forty children, ranging in age from four to 14, and coming from the Evanston public schools, were served. The types of speech problems were cleft palate, cerebral palsy, infantile speech, and stuttering.

During the past summer a children's clinic, under the joint auspices of Ohio University and the Ohio Society for Crippled Children, Inc., served 22 children from Southeastern Ohio with severe speech handicaps of varying types. The program was directed by Miss Jane Beasley, assisted by Dr. A. C. LaFollette, Dr. Elizabeth Andersch, and Miss Shirley Zwelling, student assistant.

The program provided both individual and group instruction with emphasis on the child's use of speech in interpersonal relationships. Regular classes were held each week for the parents and provisions were made for frequent observation of the work being done with the children.

This is the first clinic of such a nature to be held at Ohio University, but it is anticipated that it will be an annual part of the speech correction offerings.

Physicians, speech therapists and psychologists from five states met at Lennox Hill Hospital, New York City, on June 11 for a one-day speech conference to discuss the latest developments and methods of speech rehabilitation. The conference was sponsored by the National Society for Crippled Children and Adults, the New York State Association for Crippled Children, the New Jersey Chapter of the National Society for Crippled Children and Adults, and the Institute of Rehabilitation and Physical Medicine of the New York University-Bellevue Medical Center. Papers were presented on stuttering, aphasia, cleft-palate speech, post-laryngectomy speech, articulatory problems, and cerebral palsy speech.

The speakers were: Eugene T. McDonald, D.Ed., Associate Professor of Speech Education and Director of the Speech and Hearing Clinic, Pennsylvania State College; Jayne Shover, M.A., Consultant in Speech and Hearing and Director of the Cerebral Palsy Division, The National Society for Crippled Children and Adults; Herbert Koepp Baker, Ph.D., Director of Cleft Palate Training Program and Center, University of Illinois Medical School; Jon Eisenson, Ph.D., Director, Queens College Speech Clinic; Wendell Johnson, Ph.D., Professor of Psychology and Speech Pathology and Director of the Speech Clinic, State University of Iowa; Darrel J. Mase, Ph.D., Professor of Education and Director of the Speech Clinic, New Jersey State Teachers College; Dr. Howard A. Rusk, Director, The Institute of Rehabilitation and Physical Medicine; and Lawrence J. Linck, Executive Director, The National Society for Crippled Children and Adults.

The thirty-fourth meeting of the Convention of American Instructors of the Deaf was held at the Illinois School for the Deaf on June 19 to 24. There was a section devoted to audiology under the chairmanship of Dr. Raymond Carhart. Mrs. Evelyn Corgan and Mr. Edwin Shutts, Northwestern University, gave a demonstration of speech audiometry. Dr. S. Richard Silverman was the moderator of a panel discussion on the management of the hard-of-hearing child which had as its participants Dr. Leo G. Doerfler, Miss Jeanette Frasier, Dr. Richard Marcus, Miss Miriam Pauls, Dr. Scott Reger and Miss

Marian Quinn. Dr. and Mrs. A. W. G. Ewing demonstarted an evaluation of the hearing loss of two young children. Dr. Hallowell Davis spoke on the frontiers of audiology.

A section on speech was chairmaned by Dr. Silverman. Demonstrations were given by Miss Margaret Scyster and Miss Alyce Thomas of the Illinois School. Dr. Sherman K. Smith spoke on speech development for the deaf. Dr. C. V. Hudgins talked on the evaluation of the speech of the deaf, while Dr. Earl Schubert gave a report on the visible speech research project. Dr. Glenn Taylor spoke on experimental phonetics for the teachers of the deaf.

Dr. Grant Fairbanks represented ASHA on a panel discussing 'What Have We to Offer to Teachers of the Deaf?'

The annual convention of the National Society for Crippled Children and Adults, Inc., will be held at the Commodore Hotel, New York City, November 7 to 10. Marking 28 years of service to the handicapped, the convention will offer a comprehensive presentation of the society's three-point program of direct services, education, and research. Exhibit materials and demonstrations will show the type and scope of direct services to the handicapped.

The fourth annual Conference on the Education of Exceptional Children, sponsored by the Illinois Association for Exceptional Children and the University of Illinois, was held at Urbana, July 7 and 8. Visiting speakers included Dr. Elise H. Martens, Chief, Exceptional Children and Youth, U. S. Office of Education; Mr. Daniel Cloud, Superintendent, Illinois School for the Deaf; Dr. Paul Moore, Associate Professor of Speech Correction, Northwestern University; and Mr. Ray Graham, Director, and Miss Martha Black, Assistant Director, Division of Education of Exceptional Children, Illinois State Department of Public Instruction. Sectional meetings focused on speech defectives, the deaf and hard-of-hearing, the mentally handicapped, and gifted children.

Mu Iota Sigma, national fraternity for teachers of the deaf, is holding its 1949 convention October 7 to 9 at the Midland Hotel in Chicago. Among the program events is a talk by Dr. W. S. Gray on the broader aspects of reading and a panel on frontiers of research in audiology. Participating on the panel are Dr. Raymond Carhart, Dr. Herbert Koepp Baker, Dr. Helmer Myklebust, Dr. George Shambaugh, Dr. S. Richard Silverman, Miss Alice Streng, and Dr. Harold Westlake. Mrs. Rose Stuart Jones is coordinator of the panel.

The Community Hearing Council of Greater Pittsburgh is publishing a directory of available services in the area of hearing. Medical men, educators, public health workers, social service workers and hearing aid dealers are cooperating to describe in detail their services and to make the brochure available to the public.

The Department of Child Study, Vassar College, announces the release of a film entitled *Pay Attention: Problems of Hard of Hearing Children*, to be distributed by the New York University Film Library, 26 Washington Place, New York 3, New York. The film is 16 mm. black-and-white, sound, 3 reels, running time 30 minutes. The film is available for sale at $110 and for rental at $6.00 (for one day).

Pay Attention is suitable for lay audiences, such as PTA groups and for college teaching. It shows some of the educational and personality problems faced by the child who is hard of hearing but is not 'deaf' and suggests some of the ways in which parents, teachers, and specialists can help. The camera

follows selected pre-school, school-age, and high school children who are hard of hearing and indicates a variety of problems and remedial techniques associated with different age levels and different personality characteristics. Understanding of the problem and its early treatment, and use of 'context' methods of speech reading, and the early use of hearing aids where appropriate are stressed.

The film constitutes a part of a program of research and public information of problems on the hard-of-hearing carried out at Vassar College with the help of a grant from the Estate of Lester N. Hofheimer, initiated under the direction of Dr. Mary Fisher Langmuir. Script and direction are by Dr. Lawrence Joseph Stone. Guidance on hearing problems was given by Dr. Lee Meyerson, Research Fellow, U. S. Public Health Service, and Miss Ciwa Griffiths, Special Education Coordinator, County of San Diego Schools.

A complete mimeographed transcription of the sound track, including both commentary and conversation between children and teachers, is furnished with each rental or sale of the film and is available on request to professionally interested persons from the New York University Film Library. A study guide is in preparation.

The National Committee for Chile is now receiving gifts for the library of the medical school of the University of Chile. The newer materials in the library, including periodicals, books and reference materials, were totally destroyed in the recent fire. Medical periodicals of the last ten years and recent medical books are urgently needed. Contributions should be sent to the National Committee for Chile, Room 318, Library of Congress, Washington, D. C.

The Hearing Conservation Program of the Michigan Department of Health has received delivery of a new mobile trailer unit for use in the case-finding phase of the program's activities. The new unit is a specially constructed 21-foot trailer built by the Palace Trailer Corporation. It contains a sound-treated testing room and a control and waiting room connected by a sound-treated door and viewing window.

One mobile unit has been in operation during the past school year and has proved to be of great value in the program. The older mobile unit contains a three-channel electro-acoustic amplifying system for speech reception testing. It will be equipped to do hearing aid evaluation in rural areas in connection with the project of helping to provide hearing aids for handicapped children who have no access to special education.

Quota Club International, Inc. has adopted service in the field of hearing as one of its main projects. It is a service club of some 6,000 women executives in business and the professions, organized into 200 Quota Clubs in Canada, Australia, the United States and Mexico.

In the year since they have adopted this project, Quota Clubs have bought audiometers for schools, given scholarships to train teachers of the acoustically handicapped, arranged for lectures to parents by specialists, helped pay the office upkeep of hearing centers, and in the cases of needy handicapped persons, paid for hearing aids, operations, and courses in lipreading.

Sigma Alpha Eta, the speech and hearing society for students organized at The Pennsylvania State College in 1947 by Dr. Eugene T. McDonald, Director of the Speech and Hearing Clinic, was recently developed into a national organization under the leadership of Dr. C. Cordelia Brong, its present adviser. The organizational meeting was a feature of the Eastern Public Speaking Conference held at

the Hotel New Yorker in New York City on April 7, 8, and 9, 1949.

Attending the organizational meeting were representatives from Brooklyn College, Hunter College, State Teachers College, Lock Haven, Pennsylvania, State Teachers College, Montclair, New Jersey, New York University, Pennsylvania State College, University of Pittsburgh, and University of Virginia. Suggestions made by mail by nine prospective advisers who were unable to attend the meeting were incorporated in the planning. The chief item of business was the completion and adoption of the national constitution which had been drawn up by a committee of advisers and student representatives from the two existing chapters of the society, located at Pennsylvania State College and State Teachers College, Lock Haven, Pennsylvania. Requests for membership were then considered, and 20 charter chapters in colleges and universities covering a geographical area of nine states in the U. S. and Hawaii were approved. Requests for additional chapters have been received since the time of the meeting.

Officers elected are as follows: President, Miss Ruth Curtis, Director, Speech and Hearing Clinic, State Teachers College, Lock Haven, Pennsylvania; Vice-President, Miss Ruth Sydney, Speech Therapist, University of Pittsburgh, Pittsburgh, Pennsylvania; Executive Secretary, Dr. C. Cordelia Brong, Assistant Professor of Clinical Speech, Pennsylvania State College, State College, Pennsylvania; Treasurer, Miss Adeline McLelland, Director, Speech and Hearing Clinic, Bowling Green State University, Bowling Green, Ohio; Editor, Miss Margaret Byrne, Director, Speech and Hearing Clinic, Mount Mercy College, Pittsburgh, Pennsylvania.

The National Board is composed of the above named officers, together with four members-at-large chosen from graduate students and graduating students in speech and hearing who have been active members of Sigma Alpha Eta for at least a year. The Board will meet annually at the time and place of the ASHA convention. Since there are at present only two active chapters, the members for the December, 1949, meeting have been chosen from those chapters. They are: Charles Diehl and Wilma Grove, Pennsylvania State College, and Ernest Fryer and Betty McGhee, State Teachers College, Lock Haven, Pa.

Structured on three levels, the organization provides for Associate, Key, and Honor membership. The Associate level is open to any regularly-enrolled college student who is interested in speech correction and hearing work; Key members include students specializing in the speech and hearing curriculum; and Honor members are chosen for high achievement in academic and clinical activities. The objectives of the organization are: to create and stimulate an interest among college students in the field of speech and hearing; to encourage professional growth by providing learning experiences not offered in the formal course structure; to foster a spirit of unity by coordinating the interests and efforts of persons with a common goal, by offering opportunities for social and professional fellowship, and by providing situations in which students and faculty may work together as a team to advance the profession as a whole; to aid in building wholesome public relations with other college departments and with local organizations interested in the field of speech and hearing; to inspire high planes of achievement in academic and clinical activities.

Any college or university in which speech correctionists and/or hearing specialists are graduated is eligible to establish a chapter of Sigma Alpha Eta. Further information regarding the society may be received by writing to the national executive secretary of the organization. Where chapters

(other than the charter chapters) are desired during the present year, the necessary application should be made before December, 1949.

The Child-Family Digest, a monthly, non-profit, educational journal for parents, has brought out its first issues. The magazine is intended to condense or reprint for general reading articles from both popular and scientific journals. The editors state that they hope to include an article on speech in each issue. The journal is published at 5320 Danneel Street, New Orleans 15, La. Introductory subscription rates are $2.00 for six months.

PERSONALS

Mamie Jones, Ph.D., has accepted an appointment on the faculty of Iowa State Teachers College, Cedar Falls. She is Director of the Speech Clinic and will be in charge of the speech correction program. Dr. Jones was formerly a member of the faculty of the School of Speech, Northwestern University.

D. E. Morley has been appointed Assistant Professor of Speech at the University of Michigan. He will have charge of the courses in clinical methods and directed teaching in speech correction, and will maintain supervision of the clinical training programs of the Children's and Adult Divisions of the Speech Clinic.

Other new appointments at Michigan include Alfred Thea, who will take charge of the Hearing Rehabilitation Division and teach courses in this area; Mrs. Lillian Boland, clinician in the Aphasia Division; Mrs. Jacqueline Tull, senior clinician in the Adult Division; and Miss Marion Hutchinson, senior clinician in the Aphasia Division. Miss Hutchinson will replace Mrs. Vivian Sheehan in September, when Mrs. Sheehan goes to the University of California at Los Angeles where Mr. Sheehan will join the psychology staff.

Miss Anne Madsen, formerly of the University of Michigan Speech Clinic, has accepted a position to teach speech correction in the Pontiac, Michigan, public schools.

William Miller, who has been doing doctoral work in Audiology at Northwestern, has joined the staff of the Institute of Logopedics, Wichita. He will direct a program in audiology.

Dr. Edward Shulman is joining the faculty of the University of Syracuse and will be a member of the staff of the Speech and Hearing Center. He was formerly at Ohio State University.

Miss Harriet L. Haskins, who has been doing graduate work at Northwestern, has been appointed Instructor of Laryngology and Otology, School of Medicine, and Instructor of Physiological Hygiene, School of Hygiene and Public Health, The Johns Hopkins University.

Miss Roma Hayworth has pointed out a mis-statement about her activities that appeared in the March issue. She is on leave from Ball State Teachers College, Muncie, Indiana. This past year she did graduate work and held a clinical assistantship in the Speech and Hearing Clinic at the University of Southern California, not at the John Tracy Clinic. She plans to take another year's leave of absence and join the staff of the South Oral Kindergarten, Adelaide, South Australia, as of September.

Richard Flowers has been appointed Assistant Professor of Speech in charge of the speech correction program at the University of Buffalo. He has been doing doctoral study at Northwestern University.

Miss Lucy M. Moore has been appointed Assistant Professor in Hearing and Speech Therapy at Western Reserve University. She has also been appointed Supervisor of Clinical Services for Deaf and Hard of Hearing at the Cleveland Hearing and Speech Center. Miss Moore is succeeding Mrs. Gladys Bon Davis, who has been appointed Supervisor of the Deaf and Hard of Hearing in the Cincinnati Public Schools.

Dr. Ollie Backus has accepted an appointment on the faculty of the University of Alabama beginning in September. She was formerly Assistant Professor of Speech Correction at the University of Michigan.

Miss Jane Beasley has joined the staff of Ohio University of Athens. She has been with the Institute of Human Adjustment, University of Michigan.

Miriam D. Pauls has been appointed Assistant Professor of Laryngology and Otology, School of Medicine, and Assistant Professor of Physiological Hygiene, School of Hygiene and Public Health, The Johns Hopkins University.